MAY/JUNE 2003

# FAA Aviation news

AVIATION SAFETY FROM COVER TO COVER

Cover Story:

## The Current Status of FITS

U.S. Department
of Transportation

**Federal Aviation
Administration**

**Norman Y. Mineta,** *Secretary of Transportation*
**Marion C. Blakey,** *Administrator*
**Nicholas A. Sabatini,** *Associate Administrator for Regulation and Certification*
**James Baliough,** *Director, Flight Standards Service*
**Robert A. Wright,** *Manager, General Aviation and Commercial Division*

**Louise C. Oertly,** *Acting Editor*
**A. Mario Toscano,** *Associate Editor/Art Director*
**H. Dean Chamberlain,** *Forum Editor*
**Deidria Shaw,** *Administrative Assistant*

The FAA's Flight Standards Service, General Aviation and Commercial Division, Publications Branch, AFS–805, Washington, DC 20591; telephone (202) 267–8212, FAX (202) 267–9463; publishes FAA AVIATION NEWS in the interest of flight safety. The magazine promotes aviation safety by calling the attention of airmen to current technical, regulatory, and procedural matters affecting the safe operation of aircraft. Although based on current FAA policy and rule interpretations, all printed material herein is advisory or informational in nature and should not be construed to have regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers that may be mentioned. **Certain details of accidents described herein may have been altered to protect the privacy of those involved.**

The Office of Management and Budget has approved the use of funds for the printing of FAA AVIATION NEWS.

**SUBSCRIPTION SERVICES**
The Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402–9371, sells FAA AVIATION NEWS on subscription. Use the self-mailer form in the center of this magazine to subscribe.

***CHANGE OF ADDRESS OR SUBSCRIPTION PROBLEMS***
Send your label with correspondence to Sup Doc, Attn: Chief, Mail List Branch, Mail Stop: SSOM, Washington, DC 20402–9373. Or call GPO Customer Service at (202) 512–1800/6; FAX: (202) 512–2168.

To keep subscription prices down, the Government Printing Office mails subscribers only one renewal notice. You can tell when your subscription ends by checking the date on the second line of your mailing label. To be sure that your service continues without interruption, please return your renewal notice promptly.

**********3-DIGIT 342
FAN SMITH212J JUN96 R 1 423*
JOHN SMITH
212 MAIN ST
FORESTVILLE MD 20747

**http://www.faa.gov/avr/afs/news/index.cfm**

# FAA Aviation news

MAY/JUNE 2003

VOLUME 42 · NUMBER 3

## FEATURES

**1** FITS–FAA/Industry Training Standards - Part 2
**6** Helicopter How-Tos
**9** Helicopters and Wire-strike Accidents
**15** State of the Art Simulation and Virtual Reality
**16** Tapestry of Disaster: An Accident Story
**18** Countdown to Kitty Kawk
**23** 2003 General Aviation Awards Program Winners Announced
**26** Something To Think About
**33** 2002 NTSB Aviation Accident Statistics

## DEPARTMENTS

**25** MedicalStuff: A Checklist for Pilots...
**28** Runway Safety Corner: Airport Signs and Markings Quiz
**29** Maintenance Alerts:
Cessna Single-Engine Throttle Controls
**34** FlightFORUM
**35** AvNEWS
BACK COVER Editor's Runway

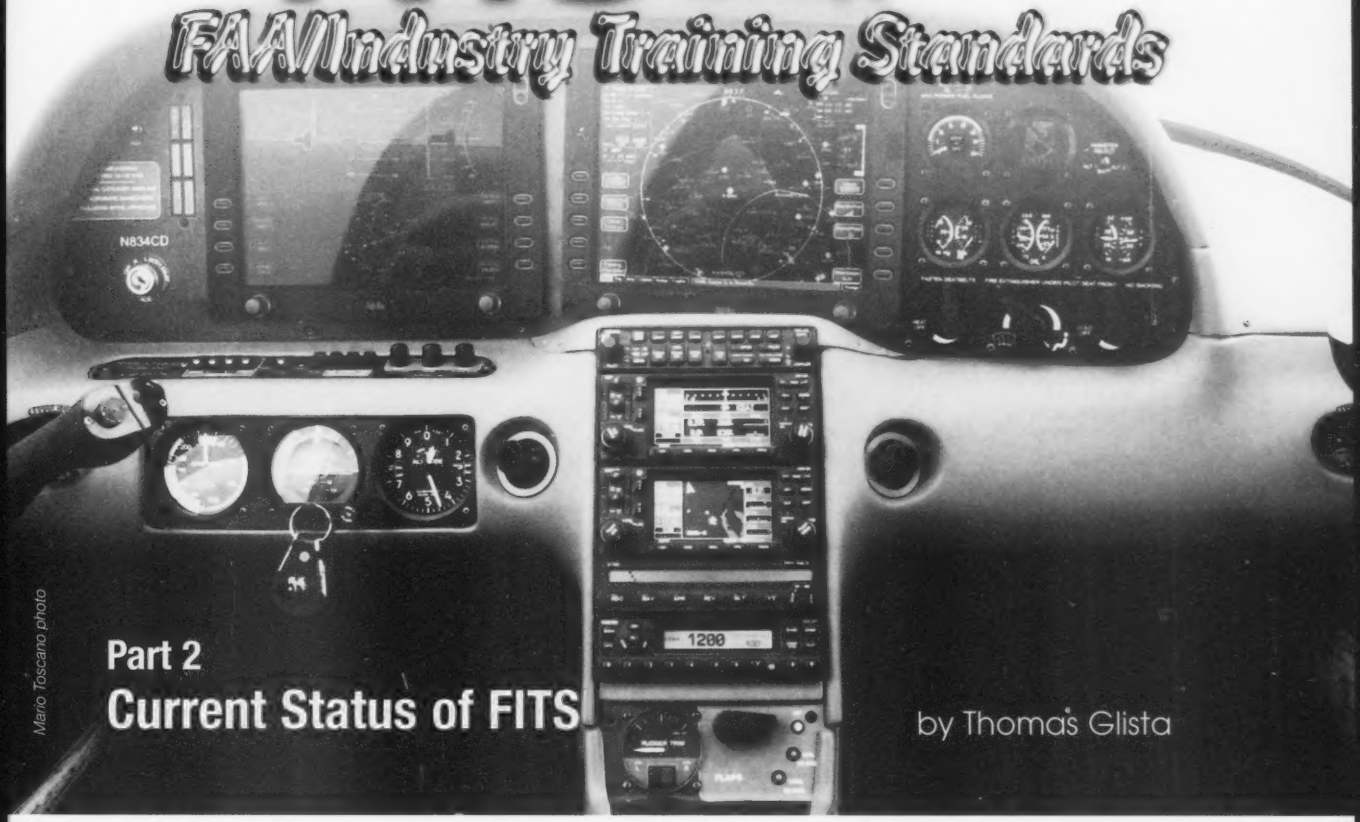
*FRONT COVER: Petroleum Helicopter Inc.'s BO-105S helicopter. (H. Dean Chamberlain photo)*

*BACK COVER: A Learjet 35A shows its elegance in flight (photo courtesy of the manufacturer)*

# FITS

## Times (and Training Requirements) Are a Changing

# FAA/Industry Training Standards




Mario Toscano photo

## Part 2

## Current Status of FITS

by Thomas Glista

For any of you who missed Part 1 of the FAA/Industry Training Standards (FITS) article, let me give you a brief overview of the why and what of FITS. Advanced technology systems that have previously been the sole domain of airlines and expensive corporate jets have trickled down into small, single engine aircraft. In the past, displays, avionics, and navigation equipment all looked and worked pretty much the same no matter who manufactured the unit. For example, VOR/ILS heads all basically looked alike—a rotating compass around the outer edge of the unit, a horizontal and vertical path needle, or light bar, to-from indicator, and an "off" flag. You tune and identify a frequency, select a course, intercept it, and go. You've seen one; you've seen them all. Advanced systems and displays, on the other hand, look different and the way the pilot uses them may differ. If you try to program a Bendix/King ® KLN 90B the same way you program a Garmin® GNS 430, it probably will not work very well.

So, why don't the big boys have problems? First and foremost is training. Basically, air carrier captains are required to take recurrent instrument proficiency training every six months and an aircraft check every 12 months (Title 14 Code of Federal Regulations (14 CFR) §121.441). Charter captains who are authorized to fly IFR have a similar requirement (14 CFR §§135.293 and 135.297). Most corporate jets are large aircraft (over 12,500 lbs. maximum gross takeoff weight) that require a two-pilot crew and the captain to hold a type rating in the aircraft. Also, 14 CFR §61.58 requires that the pilot in command of an aircraft type certificated for more than one flight crewmember must complete a proficiency check at least every 12 months in an aircraft that is certificated for two pilots and complete a proficiency check at least every 24 months in the type of aircraft the pilot in command is flying. Therefore, airline, charter, and corporate pilots are constantly taking recurrent and proficiency training in the type of aircraft they operate.

In general aviation, a pilot with a commercial certificate with a single and multi-engine-land certificate and instrument rating could satisfy the regulations by taking a flight review every two years in a Cessna 150, then go fly off in a Mitsubishi MU-2, a 250 knot, twin-engine turboprop.

FITS is working to take the best practices of the airlines and corporate jets, tailor them to the GA environment and provide incentives for their use without imposing any new regulatory requirements—all the while increasing safety and convenience and reducing the time and cost of training.

Later I will describe our "Launch Customers" and the products the FITS team is currently developing. It may seem simple to develop a syllabus; many syllabi have been developed, published, and used successfully. But bear in mind that the FITS team will be developing innovative approaches to training. We intend to look into scenario based training, aeronautical decision making, single pilot resource management, and risk management. We may also conduct studies on the effectiveness and expanded use of simulation devices, including different levels of personal computer-based aviation training devices (PCATDs).

FITS is developing and growing. Our "launch customers" are working closely with the FAA and the Air Transportation Center of Excellence for General Aviation, Center for General Aviation Research (CGAR) to produce training standards for these customers. We say that we have two "Launch Customers," Elite Flight Center and Eclipse Aviation, but we really have four. Elite Flight Center is actually three entities: Elite Flight Center, AirShares Elite, and Cirrus Design. AirShares Elite (one of one) is developing an owner flown shared ownership program for the Cirrus Design (two of one) SR-22. Most SR-22 fractional owners are pilots, but they had never flown a Cirrus. These pilots needed transition training, both for safety and for insurance purposes. Elite Flight Center (three of one) was formed to handle the transition training. In the course of selling the aircraft, AirShares Elite received inquiries from non-pilots. They wanted the aircraft for transportation. These business people were not what we call "aviation enthusiasts." Aviation enthusiasts are people who want to fly for the sheer joy of breaking the surly bonds of earth. No, these were people who wanted to get from here to there safely, quickly, and efficiently. The airplane, like a car or a computer, would be a tool to get something done. They knew they had to learn to drive a car and work a computer, so they know that they need to learn to fly. But these are not the type of people who can hang around airports to pick up an hour or two of flight to fill their logbook in hopes to get another rating. They are busy professionals with things to do and businesses to run. They also

Mario Toscano photo

would not be satisfied with only a VFR private pilot certificate. They need to be able to plan on flying safely to their destination when they want to, not be restricted to VFR weather only. Consequently, they need to get a private pilot certificate with an instrument rating quickly and efficiently.

So how does Elite Flight Center meet the needs of their customers?

First, Elite Flight Center has applied to their local Flight Standards District Office for a pilot school certificate under 14 CFR part 141. For simplicity purposes, their initial application is for two flight courses: a Private Pilot-Airplane, Single Engine Land course and an Instrument-Airplane course. The FITS team is currently working on an ab-inito combined private/instrument curriculum. We believe that this curriculum could be approved under 14 CFR §141.57, Special Curricula, which reads: "An applicant for a pilot school certificate or provisional pilot school certificate may apply for approval to conduct a special course of airman training for which a curriculum is not prescribed in the appendixes of this part, if the applicant shows that the training course contains features that could achieve a level of pilot proficiency equivalent to that achieved by a training course prescribed in the appendixes of this part or the requirements of part 61 of this chapter." As soon as the initial pilot school certificate is issued to Elite Flight Center, they will apply to add the combined private/instrument course to their pilot school certificate.

In February 2003, the first two production Cirrus SR-22's, featuring the Avidyne FlightMax™ Entegra, 10.4 inch horizontal Primary Flight Display (PFD) were delivered. As you can see by the photo (left) of the SR-22 cockpit, it looks nothing like the conventional cockpit you find in your 1965 Cessna 172. The FAA's Airman Testing Standards Branch conducted four evaluation flights of the SR-22 with this cockpit. Their initial reaction was that it was easy to fly with the PFD once you got used to the presentation. They saw no major difficulty in transitioning to this airplane WITH PROPER TRAINING (emphasis added). They are in the process of revising the Instrument Practical Test Standards and will make changes to introduce tasks to address this new type of equipment. By the time you read this, a transition curriculum for the SR-22 should be complete and on our website.

Mario Toscano photo

Cirrus SR22

Speaking of websites, FITS now has a website at <www.faa.gov/avr/afs/fits>. This website is currently very simple. It contains additional in-depth information on the FITS program, a few of the FITS products, links to associated websites (i.e., Cirrus Design, Eclipse Aviation, Center for General Aviation Research, Avidyne, etc.). The FITS program is not planning to have a supply of paper documents. All standards will be electronic on the website. As the FITS program evolves so will the website. I will write about that in Part 3 of this article.

Besides the combined private/instrument curriculum and the transition training curriculum, the FITS team will develop a recurrent training syllabus and standards, and a flight instructor syllabus and standards for the Cirrus. The recurrent training syllabus is taking a customer friendly approach by giving the pilot a new recurrent training option. The main thrust of this recurrent program is continuous training throughout the biennium (two-year period), sort of like doctors or lawyers are required to accomplish. The specific details are still being worked on, but basically, the pilot must complete a module of instruction every quarter or half year. It might be on line or off a CD. Once in the biennium the pilot must fly with an instructor (who has completed his/her own training in this system). At the end of each module the pilot can print out a certificate of completion. On-line or CD modules can be completed at the pilot's convenience.

One of the beauties of this system is that modules can be quickly changed to meet the needs of the pilot. Recently, airspace was changed due to security requirements. Instead of waiting two years to learn about this with an instructor, the next module you take could include this information. So, how do we make this a recurrent training program under the CFR's? Currently, there are many ways to comply with the flight review rule. You could: receive the one hour of flight instruction and one hour of ground instruction (§61.56(a)); pass a pilot proficiency check (§61.56(d)); or satisfactorily accomplish one or more phases of an FAA-sponsored pilot proficiency awards program (§61.56(e)). Most pilots think of the FAA's "WINGS" program when they hear "FAA-sponsored pilot proficiency awards program." However, the FAA can approve other programs as pilot proficiency awards programs. In this case, the FITS team will bring its program to the appropriate FAA office (Flight Standards Service, General Aviation and Commercial Division, which is where I work) for approval. Since this program should be designed to be at least equivalent (or higher) standard than the current flight review requirements, the FAA can designate this as another "FAA-sponsored pilot proficiency awards program."

Our other "Launch Customer" is Eclipse Aviation. The Cirrus Design SR-22 is an advanced technology piston engine powered airplane; the Eclipse 500 is an advance technology small turbine powered airplane. Late last year, Eclipse Aviation "determined that the (Williams International) EJ22 (engine) is not a viable solution for the Eclipse 500 aircraft" and terminated the contract with Williams. The Eclipse 500 was originally scheduled to receive FAA type certification in Winter 2003/2004, with deliveries beginning in January 2004. Eclipse now has an agreement with Pratt & Whitney Canada Corp. (P&WC) to equip the Eclipse 500 with P&WC's PW610F turbofan engines. Based on the PW610F development schedule, the Eclipse 500 is now projected to receive FAA type certification and begin customer deliveries in the first quarter of 2006. Eclipse Aviation representatives have been active in the FITS group from its inception and we are working on their training standards, including transition (type rating training), flight instructor and recurrent. Eclipse is interested in the training developed for the SR-22 since many of their fu-

ture pilots will be graduates of the Cirrus program. Additionally, the Eclipse 500 is a single pilot aircraft and subject to the same recurrent training requirements as the SR-22 (yes, the Eclipse 500 will be a biennial flight review airplane). Being involved in the development of the SR-22 "FAA-sponsored pilot proficiency awards program" will aid in the development of the Eclipse recurrency program. Eclipse Aviation is planning to apply for a 14 CFR part 142, Training Center Certificate.

There are two other teams working with the FITS program. They are the FITS Oversight Committee and the FITS Workgroup. The FITS Oversight Committee has been established to provide industry oversight guidance to FAA and the FITS team on the FITS Program Plan, team goals and methodology, and schedule and tasking. It consists of representatives from the FAA, the Small Aircraft Manufacturers Association, the General Aviation Manufacturers Association, the Aircraft Owners and Pilots Association-Air Safety Foundation, and the National Air Transportation Association. The FITS Workgroup will evaluate the products the FITS program is producing, and develop guidance and recommend appropriate training programs and guidance for aviation safety inspectors and designated pilot examiners. The Workgroup may also provide recommendations on products they believe the FITS program should develop. FITS Workgroup members include FAA representatives from the FITS team, the Flight Standards Training Division, representatives from the aviation safety inspector's union, and field inspector subject matter specialists.

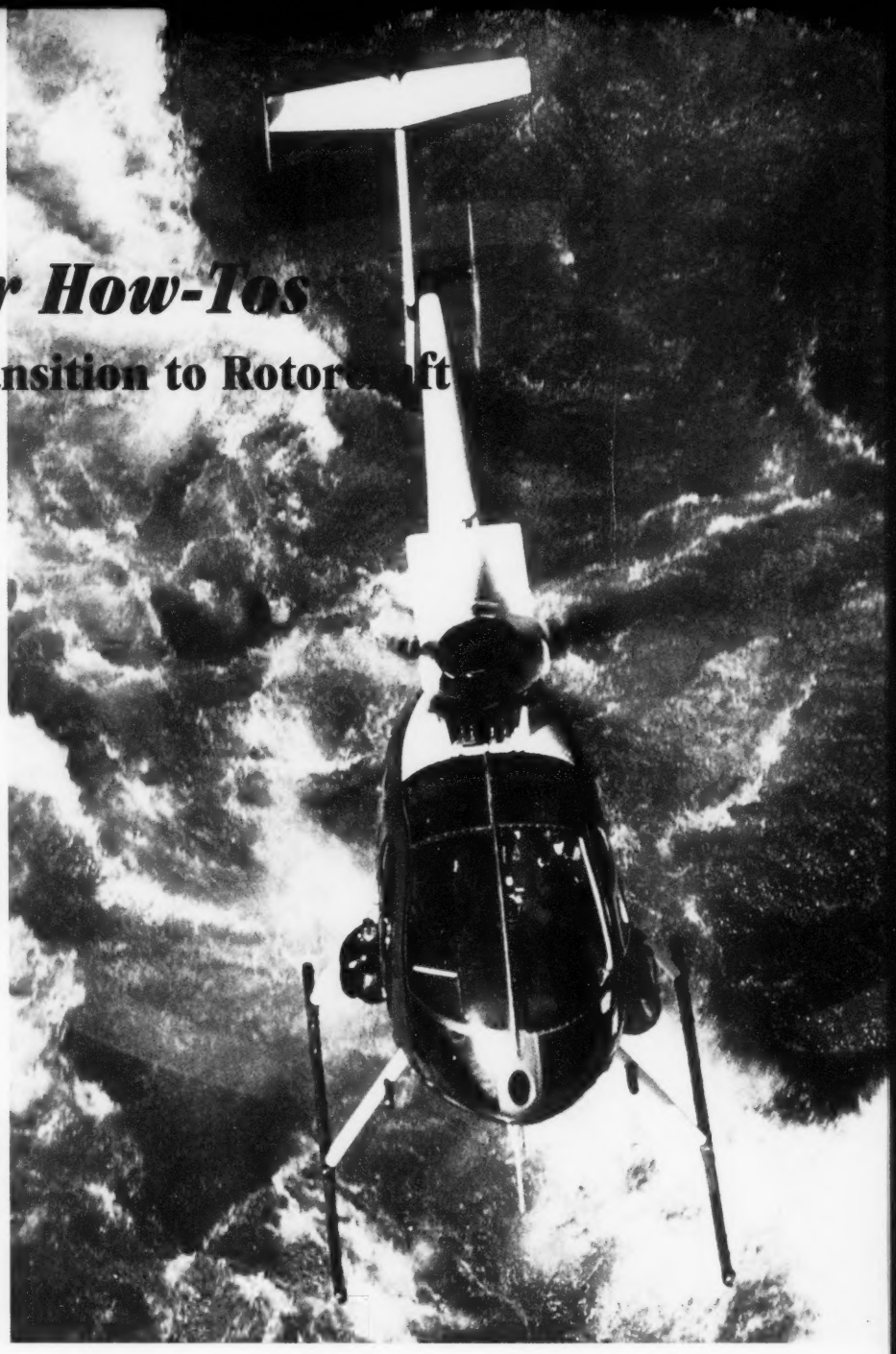
Another aspect of FITS that we are working on is a process for promulgating FITS. In general aviation, the FAA often issues advisory materials and recommendations (i.e. Advisory Circulars), "throws them over the fence," and hopes the general aviation public picks them up. Sometimes they do; sometimes they don't. When they don't, the time, resources, and information go to waste. That is why we are working with the FAA Aviation Safety Program, industry organizations, aviation magazines, insurance companies, and training suppliers. We want to make sure that we not only develop timely industry training standards, but the aviation public and industry knows about them and has easy access to them. All standards will be placed on the FITS website.

As you can see the FITS program is well underway. We are working hard at developing products for our launch customers. As with any new program, there are some growing pains. So we are working hard to take care of our "Launch Customers." We will be using what we have learned so far and expand the program. But, even now we are contacting other customers (or potential customers) to expand this program. We have had meetings with Adam Aircraft, Cessna, New Piper, and NASA. We have also met or talked with Avidyne, Electronic Flight Solutions, Weather Services International, flight training device and personal computer-based aviation training device manufacturers, FAA's local and regional offices, and other organizations.

In the next issue I will discuss the future view of FITS.

*Thomas Glista is an Aviation Safety Inspector in Flight Standards' General Aviation and Commercial Division and leads the FITS program.*

*Eclipse Aviation photo*



# *Helicopter How-Tos*

## Making the Transition to Rotor[illegible]ft

by Franklin C. Barnes

"Helicopter 192 Bravo you are cleared for takeoff south along the taxiway."

The helicopter lifts to a hover, and then, with a slight lowering of the nose, it begins its takeoff run. Within minutes we depart the pattern at 500 feet AGL, along the designated helicopter departure route. My student, Aaron, a fixed-wing pilot, looks like he is getting used to the helicopter's open doors and low cruising altitude. Flying through the Santa Monica Mountain Pass we pass over the Getty Museum and do a slow 360-degree turn around it.

"What a view," he says.

We fly through Santa Monica Airport's Class D airspace and proceed into Los Angeles Class B airspace. "Los Angles Tower, Helicopter 192 Bravo requesting a Sepulveda approach, landing at heliport." I tell Aaron we're going to LAX for some coffee.

We land and walk through the heliport's security gate. As we sit inside the international terminal sipping a latte, Aaron is still amazed at how different it feels inside the helicopter cockpit. The unobstructed view, the different feeling of motion through the air, and the ability to land at airports or off. This is just a brief 30-minute flight, but it shows Aaron the versatility of the machine, and it gives him a new experience in flying.

This vertical flying machine, tenderly known as a helicopter, is a totally different beast. It flies forward, backward, and sideways. It hovers over a spot at 20 to 2,000 feet. It can land in confined areas. It doesn't need a runway to takeoff or land. For the fixed-wing pilot (or "flat-liner") who wants to enter the world of helicopter flying, it's not as hard as you think. It's like playing the drums, moving both hands and feet to keep the beat.

That's the dance of the helicopter pilot.

As a helicopter flight instructor, my biggest challenge with fixed-wing transition students is getting them comfortable in the new environment. The fixed-wing pilots have to overcome the fear of falling out of the sky when the

airspeed sinks below 50 knots. They must also break their habit to over control, which makes flying a helicopter much more difficult and more dangerous—in an emergency, fixed-wing pilots revert to what they know (Law of Primacy). Those inappropriate control inputs are dangerous and scary. Fixed-wing pilots must also learn to keep their respective heads outside the cockpit, instead of buried inside. The helicopter is a machine that flies with outside references, and a quick scan inside is all that's needed.

## Relearning to Fly

One way you overcome fixed-wing primacy is understanding the different rules of flying for helicopters. As flight instructors we all understand how the laws of safety and survival work. Most flat-liners understand what happens when the engine fails—the wing gives you lift as long as you have forward motion.

Helicopters are a little different. If a helicopter loses engine power, it doesn't fall out of the sky. It glides at a steep angle, but it's all under control—glide, flare, hovering auto. When you do it right, you pick a spot, glide to the spot, and land with very little forward motion, which we in the helicopter business call an autorotation. Once this maneuver and concept is introduced, safety and survival become less of an issue and the student can begin learning.

Experience in the aircraft is another way to overcome fixed-wing primacy. For example, how would you react if a gust of wind lifts the aircraft's nose and your airspeed bleeds off? In an airplane you lower the nose to gain airspeed and ward off the impending stall. If you push over quickly in a Robinson helicopter, you'll go into a low-g condition that will whip you to the right and down. The fixed-wing pilot would react to this low-g condition by quickly adding left cyclic to level the helicopter. This move will get you into mast bumping and eventually a blown blade condition—"one blade blew left, the other blade blew right." The result is a crash.

The correct helicopter response to the nose-up condition would be to leave it there until things are stable and then slowly lower the nose to level condition. As a helicopter pilot, when you get into the low-g condition, you apply gentle aft pressure on the cyclic, and once the rotor blades are loaded, you apply left cyclic. It's simple if you understand what is happening. Flying a helicopter takes five percent physical skill and 95 percent knowledge.

A hover is another difficult but rewarding maneuver. It's the trademark of the helicopter pilot—the ability to stay still over one spot. What makes this difficult is that you are working all four controls—the pedals, collective, cyclic, and throttle—simultaneously. This is difficult for the new pilot because you're stiff, behind the aircraft, looking inside, and making large control movements.

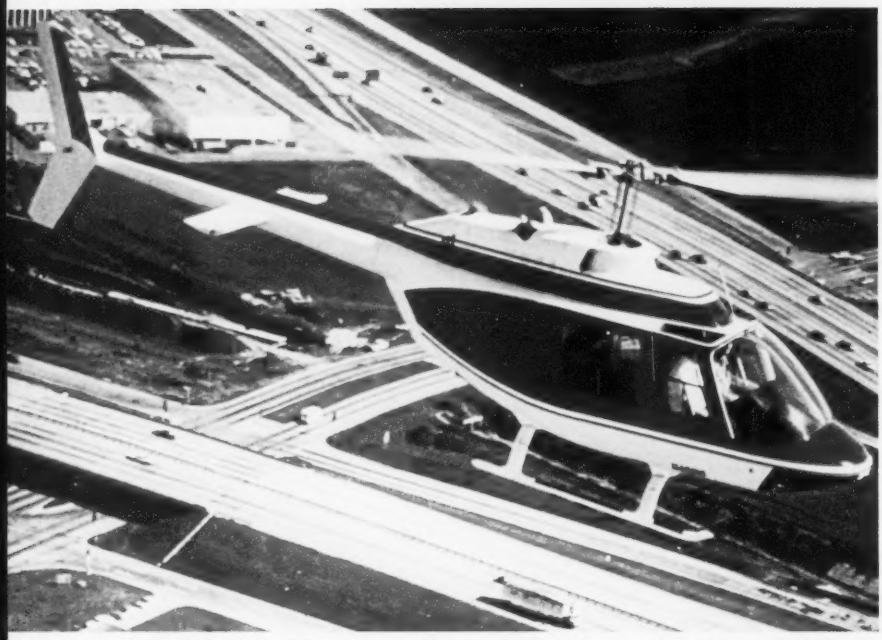
The trick to this maneuver is to relax (easily said, hard to do). Keep your eyes outside on a fixed object about 50 feet in front of you, and be smooth and stable on the controls while making very small inputs. Keep in mind that if you move one control, it affects the other three, ergo the difficulty.

I like to introduce one control at a time. As a student becomes comfortable on one control, I take over that control and let the student work the next. When the student understands what each control does, I add one at a time and voilà—"Look, Mom, I'm hovering."

## Getting the Training

Why fixed-wing pilots transition to helicopters covers the spectrum. Younger students may be looking at aviation as a career, or maybe the lesson was a gift from a parent. Middle-age students may be looking for a career change, or to add another rating, or looking for a place to have some fun and escape their stressors. Senior students do it just "because." They have the time, money, aviation experi-

*H. Dean Chamberlain photo*



ence, and the need for a new challenge that they've always wanted to meet.

Under Title 14 Code of Federal Regulations (CFR) §61.63, "Additional Aircraft Ratings," the pilot must meet regulatory training requirements and experience minimums in a rotorcraft. The pilot must log at least 40 hours of flight time in a helicopter, including 20 hours of dual training. That training must include three hours of cross-country flight training in a helicopter; three hours of night flight in a helicopter, including one cross-country of more than 50 nautical miles (nm); 10 takeoffs and landings to full stop (each landing must involve a flight in a traffic pattern at an airport); and three hours in preparation for the practical test in a helicopter, which must be performed within 60 days before the test.

Pilots must also log 10 hours of solo flight time, including three hours of cross-country; one solo cross-country of at least 75 nm total distance, with landings at a minimum three points and one segment of at least 25 nm straight line distance; and three takeoffs and landings to full stop at an airport with an operating control tower.

Going from an airplane to a helicopter looks easy, but you're talking apples to oranges. In my experience it takes 60 to 70 hours of helicopter flight time to earn the private helicopter rating. You might think that already having a pilot certificate means less time to get the rating, but fixed-wing pilots have to overcome the Law of Primacy. Automatic reactions to sudden events that work in a fixed-wing will kill you in a helicopter.

When transitioning to a private-pilot helicopter certificate, a certificated fixed-wing pilot doesn't need to take the knowledge test. The basics are the same—basic aerodynamics; aircraft systems; flight instruments; regulations; procedures and airport operations; weather; weather services; en route flight, pilotage, and navigation; and communication procedures. The major difference is in the practical side—flying the machine and performing the 23 maneuvers. Helicopter performance, aerodynamics, emergency procedures, and certain Federal aviation regulations differ from that familiar to fixed-wing pilots.

In CFR §61.107(b)(3), the helicopter areas of operations may look similar to fixed-wing training requirements: preflight procedures; airport and heliport operations; hovering maneuvers; takeoffs, landings, and go-arounds; performance maneuvers; navigation; emergency operations; night operations; and post-flight procedures.

Practically speaking, however, each of these areas requires more tasks. For example, the preflight on a helicopter should be done carefully with an attention to detail. A checklist is a must. A helicopter has 10 times as many parts as an airplane, and each one relies on another. The rotors—the main and tail—must be thoroughly inspected. After all, this is your wing. As in an airplane, if it falls apart, you haven't got a prayer. Swash plates, pushrods, rod ends, fluid levels, safety wire, and belts also need to be checked before every flight.

Another difference is actually a benefit. The nice thing about a helicopter is that you can take off and land on a taxiway. You usually don't wait in line to take off—when the taxiway is clear you depart at 500 feet AGL at midfield. You'll spend more time flying for the buck. You'll also arrive at 500 feet AGL, usually under traffic. In IFR conditions, you can usually fly out under special VFR—fewer of your flights will be canceled due to weather.

As with airplanes, understanding the performance of a helicopter is important, especially at high altitudes and on hot days. Emergency procedures differ as they relate to flight conditions, but radio failures, chip lights, and electrical failures are pretty much the same.

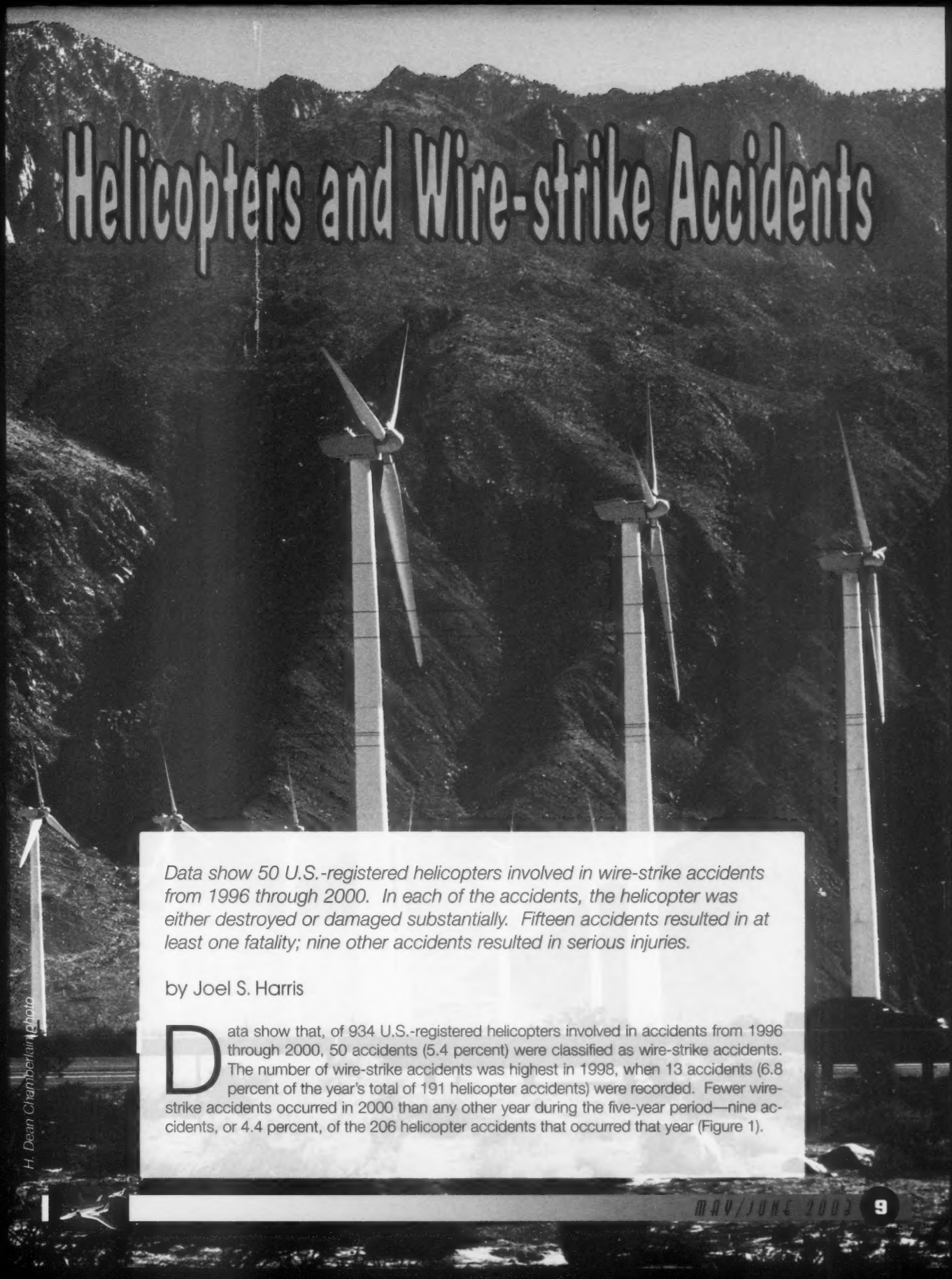
The cost of a private-pilot helicopter certificate will run between $10,000 and $15,000, depending on the aircraft you use and how fast you pick it up. As with all ratings it takes time, commitment, and (as we all know) money. And, unfortunately, it's not for everyone. A demo flight will let you know for only about $100.

With all the time and money spent in this marvel of a flying machine, I never tire of the joy I get from flying it. See how you feel cruising through the air at 80 knots, with the doors off, at 500 feet AGL. After all, what other machine makes you feel like a hummingbird?

+

*Reprinted with permission from the NAFI Mentor.*

# Helicopters and Wire-strike Accidents



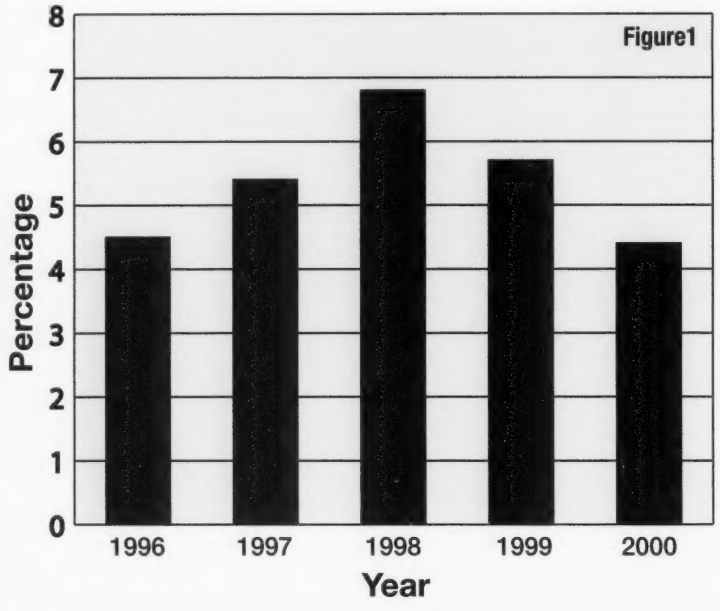
H. Dean Chamberlain photo

*Data show 50 U.S.-registered helicopters involved in wire-strike accidents from 1996 through 2000. In each of the accidents, the helicopter was either destroyed or damaged substantially. Fifteen accidents resulted in at least one fatality; nine other accidents resulted in serious injuries.*

by Joel S. Harris

Data show that, of 934 U.S.-registered helicopters involved in accidents from 1996 through 2000, 50 accidents (5.4 percent) were classified as wire-strike accidents. The number of wire-strike accidents was highest in 1998, when 13 accidents (6.8 percent of the year's total of 191 helicopter accidents) were recorded. Fewer wire-strike accidents occurred in 2000 than any other year during the five-year period—nine accidents, or 4.4 percent, of the 206 helicopter accidents that occurred that year (Figure 1).

## Wire-strike Accidents as a Percentage of All U.S. Helicopter Accidents, 1996-2001




*Source: Joel S. Harris, from Helicopter Association International data*

## Types of Injuries Resulting From U.S. Helicopter Wire-strike Accidents, 1996-2001

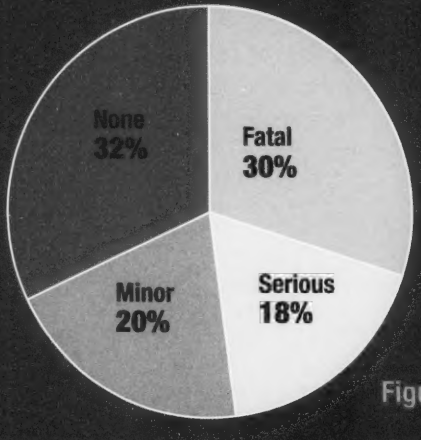



Figure 2

*Source: Joel S. Harris, from Helicopter Association International data*

Wires present particular risks to helicopters because helicopters often are flown at low altitudes and at off-airport sites for takeoff, landing, and other purposes. Some of the types of wires that pilots may encounter are power transmission lines, guy wires (used to support other objects, such as towers) and communication cables.

When crossing rivers and valleys, power transmission lines can be as high as several hundred feet above ground level (AGL). Guy wires that support towers may be almost invisible to pilots, even if the general location of the wires is known. Pilots' ability to see wires is affected by dirty windscreens, light conditions, the obscuring effects of terrain and changes in visual perspective that occur during climb and descent. In addition, accurately judging the helicopter's distance from unmarked wires is nearly impossible.

The data show that in every wire-strike accident from 1996 through 2000, the helicopter was either damaged substantially (33 accidents) or destroyed (17 accidents).

Fifteen (30%) of the 50 accidents resulted in at least one fatality, and nine accidents (18%) resulted in serious injuries (Figure 2). Ten (20%) other accidents resulted in minor injuries; in the remaining 16 accidents (32%), there were no injuries. (An accident is classified according to the highest level of injury. For example, if one occupant is fatally injured and one receives minor injuries, the accident is classified as a fatal accident.)

Seven of the 50 accidents occurred at night; of the seven night accidents, four were fatal accidents, and in three of the four accidents, the helicopter was destroyed.

One fatal accident occurred in dark-night conditions Dec. 14, 1997, near Littleton, Colorado. A Bell 407, being operated as an emergency medical services (EMS) flight, struck wires after takeoff and fell inverted to the ground. All four people on board were killed. (Four of the 50 accidents involved EMS flights.)

The U.S. National Transportation Safety Board (NTSB) said, in the final

report on the accident, that the helicopter had been flown to the site of the fatal automobile accident from the northeast and that the pilot had circled the area before conducting a north-to-south approach to the landing. Lights from emergency response vehicles on the ground illuminated the landing area.

After the patient was on board, the pilot, a former U.S. Army helicopter pilot with more than 4,000 hours of helicopter flight time, conducted a departure to the south and circled to the right, remaining at a low altitude. The NTSB report said that the pilot's company policy, which was "promulgated through documents and training," included "landing-zone departure procedures, which instructed the pilot to climb straight ahead in a near-vertical climb to a minimum of 300 feet AGL before turning."

About 630 feet (192 meters) west of the takeoff point, the helicopter struck unmarked power lines.

The report said, "Existence of the power lines was unknown to the fire-rescue on-scene commander, and the light conditions prevented the pilot from seeing anything outside the lighted area."

The power lines were supported by two towers 622 feet (190 meters) apart and located on a riverside golf course.

"The unmarked power lines did not meet obstruction-lighting criteria and were not marked," the report said. "In addition, they were not depicted on sectional or topographic maps."

Wire placement, as measured at the southwest tower from top to bottom, consisted of two static wires at the 106-foot level and six power-transmission lines at the 87-foot level, the 71-foot level, and the 55-foot level sequentially.

The report said that the accident helicopter was equipped with a wire-strike protection system designed to help protect the helicopter in the event of inadvertent flight into horizontally strung wires or cables. The equipment consists of a windshield deflector, an upper cutter/deflector and a lower cutter/deflector. (The cutter/deflectors are sharp blades above the windshield and below the nose of the aircraft). Each cutter consists of high-tensile-steel cutting blades designed to cut through the wires, thus preventing them from catching the mast, flight controls, or landing gear and preventing them from slicing through the cockpit.

The report said, "The wire cutter on the lower-forward portion of the nose section was gouged on the cutting edge and had...marks associated with the gouge areas."

The top portion of the vertical fin (about one foot [0.31 meter]) was missing, and the fracture "was smooth and exhibited knife-cut-type characteristics," the report said. The report also said that the forward outboard portion of the right skid contained chafe marks and electrical burn marks and that "several (rotor) blades had electrical-arc damage at the blade grip bolt on the upper surface."

The report said that the probable cause of the accident was "the pilot's inability to maintain adequate visual lookout due to the lighting conditions and his failure to follow company procedures for departure from a landing zone. Factors were dark-night conditions, bright lights in the landing zone, which prevented vision beyond the

zone, and [the fact that information about] the power line existence was not available on charts to either the pilot or ground personnel."

Although the wire-strike protection system did not prevent this accident, in other occurrences, the equipment has been effective.

For example, the pilot of a state highway patrol Bell OH-58 *Kiowa* that was equipped with a wire-strike protection system described an accident in which his helicopter struck a power line during a search for an escaped convict:

> *We had flown the 14-[nautical-]mile [26 kilometer] stretch down and back. Along the way, both times, I had noted three sets of power lines draped across the river. ...As we flew along, I would note the location and keep an eye out to ensure I had enough altitude to clear each one as we passed them...*
>
> *We concluded that we weren't going to locate anything, so we decided to [return]. I took one glance forward to clear the area, nosed the aircraft forward slightly, applied some power and accelerated to about 20 knots. As I did this, I looked back down [at the ground] for one quick, last-minute look. As I did, I felt the aircraft suddenly stop in midair. The nose pitched up, and the helicopter began to shake violently. In an instant, I looked forward and immediately realized what had happened, as I saw each individual strand of a power line cutting into my windshield. As I fought to keep control, I felt the tail trying to come around. I applied left pedal, and all I could think to do was shove the cyclic forward. Suddenly, I felt the aircraft break free...*
>
> *"[After an emergency landing,] I...saw that the damage was minimal. There were striations in one of the main-rotor blades, a long gash in the front-top cowling, and the windshield was cracked all the way down from the OAT [outside air temperature] gauge, which was torn out. It was then I realized [that] the wire strike protection system had saved our lives...*
>
> *"[The wire-strike protection system] managed to cut three of the four lines that were across my path. ...It almost took my breath away to know that if I had been two inches [1.5 centimeters] lower, the wire would have struck the mast and probably flipped us over."*

In a 2001 survey conducted by the Helicopter Association International and the U.S. National EMS Pilots Association, 121 EMS helicopter pilots said that each of the aircraft they flew was equipped with wire-strike protection equipment. Sixty-one respondents said that their aircraft did

H. Dean Chamberlain photo

not have wire-strike protection equipment and needed it.

More wire-strike accidents occurred during aerial-application flight (13 accidents) than flights conducted for any other purpose. Of these accidents—all of which occurred during daylight—one resulted in a fatality and five resulted in serious injury. Four aircraft were destroyed, and nine aircraft were damaged substantially.

One wire-strike accident involving an aerial-application flight conducted under 14 CFR Part 137 occurred at 0845 local time May 25, 2000. A commercial pilot was operating a Sikorsky S-58 near Buhl, Idaho, when the helicopter struck wires and was destroyed; the pilot was seriously injured.

The pilot said that he had conducted a takeoff from a staging area with 320 gallons (1,211 liters) of a diluted pesticide mixture on the sixth flight of the day. He said that he had flown the helicopter over television antennas, radio antennas, and two sets of power lines on each of the previous trips.

NTSB said, in the final report on the accident, that on this trip, the pilot was "distracted by a radio call from another pilot. The pilot looked down at a map to verify a field location, and when he looked back up, he did not see the power lines that he knew were along his flight path and [that he] had flown over on previous flights."

The helicopter struck the power lines, which were 75 feet AGL to 100 feet AGL, then pitched nearly straight up, leveled slightly, and struck the ground in a tail-low attitude.

The pilot said that there were water drops on the windshield, which was dirty, and that the sky was overcast, which reduced visibility.

Seven of the 50 wire-strike accidents involved public use aircraft being flown for a variety of purposes, including fish survey, border patrol, fire fighting, police operations, and drug eradication. During a Sept. 22, 1999, drug-eradication flight, a Bell 206L-1 *LongRanger II* operated by the New York State Police was substantially damaged, and the commercial pilot and passenger were injured seriously after the helicopter struck power lines near Randolph, New York.

NTSB, in the final report on the accident, said that the helicopter was being flown in a valley and into the sun about 200 feet AGL when the helicopter struck utility wires. An inspector for the Federal Aviation Administration said that the towers, which supported the wires, were below the tree line, but the wires were depicted on the current aeronautical sectional chart.

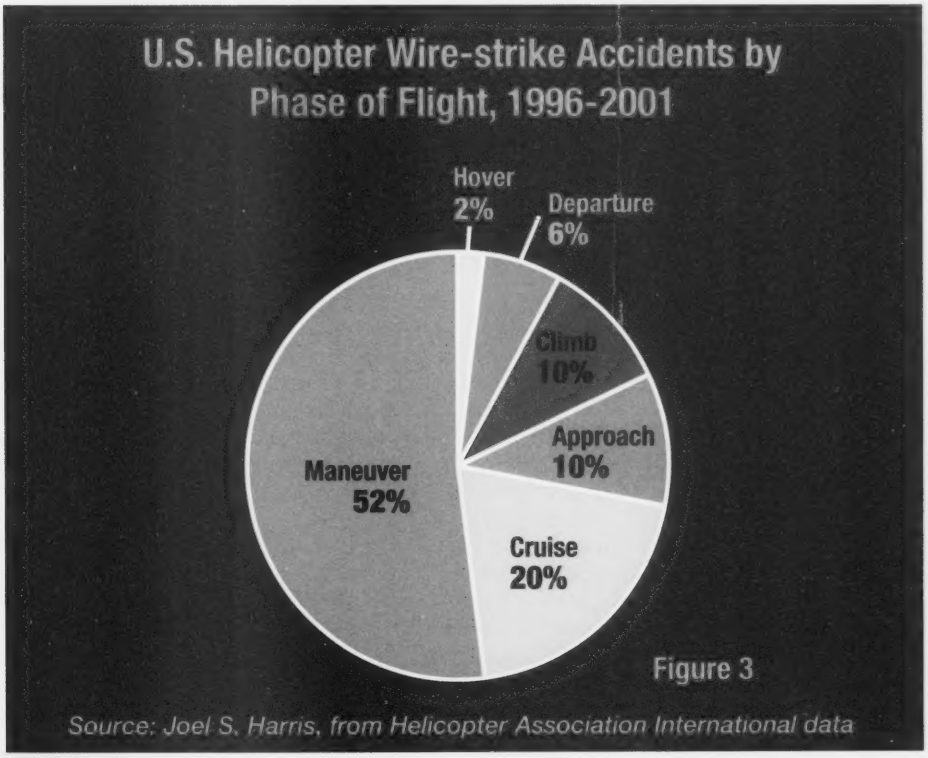
The data show that more than half of the helicopter wire-strike accidents occurred during the maneuvering phase of flight (26 of the 50 accidents or 52%). Ten accidents (20%) occurred during cruise, five accidents (10%) occurred during climb, five accidents (10%) occurred during approach, three accidents (6%) occurred during departure, and one accident (2%) occurred during hover (Figure 3).

Not all of the 50 accidents characterized as wire-strike accidents actually involved striking wires or cables. In an accident that occurred near Bartow, Florida, on July 9, 1996, a Bell 47G helicopter pilot was conducting a survey of alligator nests along a canal when his passenger warned of utility lines ahead. As the pilot executed a quick stop maneuver to avoid striking the wires, the helicopter tail rotor struck the ground. The helicopter was destroyed, and the pilot and the passenger received minor injuries.

The pilot said that a better scanning technique and a slightly higher altitude might have prevented the accident.

Specialists say that a variety of actions by helicopter pilots can help prevent wire-strike accidents.

"Pilots need to educate themselves thoroughly on the dynamics of the area," said Robert Feerst, president of Utilities/Aviation Specialists, who teaches courses in wire-strike avoid-



ance. "Until you have a basic understanding of what can get you into trouble, it's a very lethal place to be."

In addition to reviewing aeronautical charts and talking with pilots who are familiar with the area, a pilot who is about to begin low-altitude operations first should conduct a reconnaissance flight at a higher altitude, Feerst said.

Nevertheless, those precautions may not be adequate for detecting all wires.

Wires are difficult to see, partly because of the way the human eye functions and partly because of the effects of some backgrounds and light angles in camouflaging wires, Feerst said.

"The eye starts to lose its visual acuity at three degrees off-center," he said. "Unless you are looking straight at a wire, you are unlikely to see it."

The movement of wires in the sunlight and changing sunlight patterns can obscure wires, Feerst said. Wires also may be difficult to see because as they age; their color often changes. For example, copper wires oxidize with age, acquiring a greenish color that makes them difficult to distinguish from grass and trees in the background. The exact location of specific wires may change throughout the day because of fluctuating ambient temperatures, which may cause wires to sag or to tighten within several hours; sagging wires may be blown by wind.

In addition, optical illusions involving wires are common, Feerst said.

If a pilot is unable to avoid a wire strike, Feerst recommends maintaining the helicopter in straight and level flight with no abrupt maneuvers and landing as soon as possible to inspect the helicopter for damage.

In some instances, spherical wire markers and wire-detection devices may help pilots see wires. The following are examples of some of the products on the market to help identify power lines and prevent aircraft from colliding with them:

- Spherical markers sometimes are used to mark power lines, communications lines, and guy wires at airports or helicopter approach areas and at locations where wires cross rivers and canyons. These markers often are orange, but in some instances, others colors are used because they may be more visible, depending on the surrounding terrain. Some spherical markers used on electrical power lines are designed to glow as a result of the power line's electrical field; other spherical markers are patterned for improved visibility or equipped with flashing lights.
- Several wire-detection systems developed in recent years have been installed in aircraft to warn pilots when they are near wires. For example, Safe Flight Instrument Corp.'s Powerline Detection System sense the electromagnetic field generated by live electrical power lines and emits an audible alert through the aircraft's audio system – a clicking sound that increases in frequency as the aircraft is flown nearer to a "live" electric power line (a line carrying electric current) – and illuminates a red warning light in the cockpit. The warnings are provided regardless of whether the helicopter is approaching the power line from above, below, or at an oblique angle. The system does not alert pilots to wires that are not live, however.
- The Hellas (helicopter laser radar) system, developed by Dornier, a subsidiary of the European Aeronautic Defence and Space Co., uses eye-safe laser radar to scan the environment for wires and other flight obstacles and provides optical signals and acoustic signals to warn pilots about their presence. The first deliveries of the Hellas system were in September 2001 to the German Federal Border Guard helicopter squadron; and
- During flight tests in which the locations of power lines were included in a computer database, Honeywell's Enhanced Ground-proximity Warning System (EGPWS)—which warns pilots of rising terrain and obstacles that are 100 feet or more above ground level (AGL)—delivered warnings of approximately 30-seconds to pilots that their helicopters were approaching the power lines, said Andrew J. Cindric Jr., manager of business development of Honeywell's EGPWS helicopter programs.

  Nevertheless, although the system is capable of delivering the warnings, its database lacks the required information, which generally has not been available from utilities and other organizations that control wires.

  "The database is the pacing factor," Cindric said.

  He said that, if helicopter operators can obtain information in their communities about the locations of wires that are 100 feet AGL or higher and supply the information to Honeywell, the helicopter EGPWS database will be updated to include wire information.

Nevertheless, because most helicopters are not equipped with wire-detection systems and because not all wires are marked, wires continue to present risks. Specialists generally agree that the best methods of reducing those risks are pilots' education about the environment in which they will be flying and their vigilance in the cockpit.

*This article is reprinted with permission from the Flight Safety Foundation's* Helicopter Safety.

*Joel S. Harris holds an airline transport pilot certificate and a flight instructor certificate with ratings in helicopters and airplanes. He has served as a FAA designated pilot proficiency examiner, a Part 135 check airman, and a safety counselor. He is the assistant director of standards for quality assurance at FlightSafety International.*

# State of the Art Simulation and Virtual Reality

By Lauren Basham

There's no question that flight simulation in aviation is here to stay. But, how close we are to virtual reality in aviation simulation is anyone's guess. Those of us with a deep working interest in the technological advances in aviation simulation technology keep reading and hearing about the up-coming marvels of exciting simulation technology. But really, how close is it in our future and at what cost?

We have made effective use of various forms of simulation in aviation for almost three quarters of the past century, stretching from Edwin Link's dream in the 1920's to the present. The Federal Aviation Administration (FAA) has developed qualification and approval criteria for limited use low level simulation devices such as the personal computer-based aviation training device (PCATD), for the more advanced use of various levels of flight training devices (FTD) and for more extensive use of flight simulator (FS) levels A through D. Specific certification practical tests may now be accomplished solely in advanced levels of aircraft flight simulators in lieu of in an aircraft.

One unfortunate result of this technological advance in aviation simulation technological development is that in the eyes of much of the public, all of the above simulation devices are "flight simulators." In this regard there are those of us who tend to cringe when in answering the telephone, we hear the caller say, "I've got a simulator and I wonder if you can help me." Our response is generally to ask the caller, "What kind of simulation device do you have and where did you get it." It may take several specific questions for us to be able to determine whether the device in question is a PCATD, an FTD, an FS, or something of undetermined origin for which the FAA has not established creditable use under applicable Federal regulations.

Some may ask, "What difference does it make what the device is called?" Well, one difference it makes is that the user public can be and is sometimes mislead by a few of the manufacturers of such simulation products who wrongly either advertise or imply FAA approval when it is clear to FAA that no such approval has been or is likely to be granted. It may be unfortunate that there is no recognized copyright of the term "Flight Simulator." The user public could make a real difference by being more technically correct in its description of all such simulation devices. The FAA, in order to be as responsive as possible to the user public, has qualified and approved for specific use under existing Federal regulations certain simulation devices granted use equivalent to that of certain FTD, but which are not currently approvable as either FTD or FS in terms of either technical description or function. Formal FAA approval guidance for this level of simulation technology in general aviation is currently under development.

FAA is working diligently to resolve all manner of issues brought on by the rapid development of digital simulation and virtual reality is not far in the future. Imagine virtual reality applications that can immerse the user in a computer generated environment that effectively simulates reality through the use of various kinds of interactive devices such as goggles, helmets, et cetera, and which can both send and receive various kinds of information in real time. Imagine, if you will, a generic aircraft cockpit with flight controls, rudder pedals, instrumentation, switches, systems and equipment that will permit one to actually fly established scenarios from beginning to end. All this sitting before a stereoscopic screen which will permit one to view animated images of a simulated flight environment. Imagine the illusion of being there—telepresence—which is affected by motion sensors that pick up the user's manipulation of the flight controls, et cetera, and adjusts the scenes displayed on the stereoscopic screen accordingly.

This is a wonderful and mind boggling scenario. Virtual reality flight simulation could become the ultimate tool in the learning process for an untold number of persons who aspire to become pilots of every category, class, and type of aircraft to be designed in the future without ever entering an increasingly crowded national airspace. Can it or will it happen? Yes, but only if we in FAA continue to work in dedicated partnership with all appropriate elements of the aviation industry who are encouraged to conduct the needed research and developmental efforts. We can't look back or hesitate because we've come too far to stop now with virtual reality in our future.

How quickly the FAA can apply its limited resources to this area will depend on how virtual reality technology is received and perceived by industry. History has indicated that industry will move forward whether or not the FAA is prepared to join them in this venture.

+

*Lauren Basham is an Aviation Safety Inspector in the FAA's General Aviation and Commercial Division's Certification Branch, AFS-840, responsible for regulatory and policy guidance for ground and flight training devices, personal computer-based aviation training devices, and evaluation and approval of new and emerging simulation technology for use by general aviation.*

# *Tapestry of Disaster: An Accident Story*

by Parvez Dara, MD, FACP, ATP, CFII, MEI

*When we commit an error it is generally an isolated one, and we get away with it. This getting-away mentality reinforces the behavior as being okay. But start stitching a series of these scenarios together, and a tapestry of disaster unfolds.*

Often, in his most reflective moments, he would extol the many virtues of flying; the splendor of sights, of new places but mostly of its freedom. He was 60 on his last birthday, a Vietnam veteran with an artificial leg flying with a 2nd class medical certificate and a Statement of Demonstrated Ability (SODA).

He flew with precision, dedicated to his hobby and mode of transportation. Every flight was enriching to him. He carried his task of flying with zeal, from checklist to checklist, double-checking while motoring one to two miles above terra firma.

So on that cold, rainy night in October, when I got the news of his plane crash, it scared me, then chilled me, and finally numbed me. He was, in my mind, going to be an old pilot, for he was never bold. He flew this immaculately dressed Mooney 201. But the crashed plane was a Cherokee Six.

He apparently flew it with the gust locks still attached!

The plane had taken-off, gained 500 feet and then, predictably, plowed into the woods. This man, in life a stickler for checklists, in death was now the object of a storm of controversy and was leaving a legacy of stuff that he would not have been proud of.

They tried to piece together the shattered dreams of his mind and the associated features of the ill-fated flight on that rainy night in October. "Accidents don't just happen," said the aviation counselor from the FAA, "Planes don't just fall out of the sky." There is some truth to this, if you were to evaluate the cumulative vapor trail that eventually condenses into the big splash, multiplicity of factors have been involved.

Let's look at the so-called 10-17% catastrophic engine failures in piston aircraft. I am not a betting man, but I can wager that most, or all of them, gave plenty of warning signals and hence, could have been averted. The gremlins may have shown up in a previous flight, in the pre-flight, or in the intuitive feel. The oil analysis may have revealed the chewed metal in the filter, maybe the need for more oil, a blob of oil on the ground, or discordant magnetos. In flight, it may have been a change of the aircraft's behavior, in its speed, sound, dynamics, the hum, and all of the subtle noises that we are attuned to in the cockpit. This subtle vapor trail of metal, sound, feel, and dynamics is there for us to recognize.

When we commit an error it is generally an isolated one, and we get away with it. This "getting away" mentality, unfortunately, reinforces the behavior as being okay. But start stitching a series of these scenarios together, and a tapestry of disaster unfolds.

Imagine a series of cards with random holes in it reflecting the error-prone deficiencies of human beings (Figure 1). Each little hole reflects an act of omission or commission (failing to check the trim, or the fuel quantity, and so on; you get the point). Once in an unfortunate while, when those holes line up in sequence, an accident occurs.

The first priority to safety remains trying to patch the holes in each of those successive cards. Learning the art of flying, practicing it, constructing a practical checklist for all possibilities, and never taking flying for granted. For instance, every time before I fly into an airport, I look at its layout to see on departure where a straight-in engine out on take-off or landing would save my bacon. Not much but it keeps your guard up.

Consider the big boys who dream of flying Mooneys but are stuck with the Boeings. They, too, can have a bad day. The flapless take-off in Detroit, Michigan, led to hundreds dead—a minor mistake that led to a major tragedy. A Continental aircraft was about to land gear-up at the Newark airport until advised by an American pilot on the ground to put the wheels down. Mistakes from shoddy cockpit behavior, taking things for granted, or having the attitude that "I am the greatest" will bite.

Flying in low overcast without the prerequisite experience or attempting a crosswind landing beyond your abilities speaks volumes of the male gender. Some of the newly minted and even long-time pilots with little weather experience who venture into the gray unknown of an overcast day just for a rush or, better, stupidity. How can you justify that with anything but the remark, "idiots?"

There are preconditions for these unsafe acts [as per the Office of Aerospace Medicine's technical report, The Human Factors Analysis and Classification System (Shappell & Wiegmann, 2000)]:

## Substandard Conditions of Operators

- Adverse mental states
- Psychological states
- Physical and mental limitations.

We have discussed some of them above.

## Substandard Practices of Operators

- Cockpit Resource Management and Personal Readiness

The former is not flying with ade-

quate charts, plates, or lack of their utility, etc. The latter is when your instinct tells you, "It is not good to go even on severe clear and a million," so heed it.

Now, I'll get back to the story. My veteran aviator would occasionally drink beer but cognizant of the regulations, he would wait eight hours before flying. He mostly flew his Mooney, where his checklist was always dangling from the mixture control knob and he never allowed himself to rush.

On the fateful night, he had consumed alcohol nine hours before, but he also had taken an over-the-counter mediation for allergies, which it turns out, decreases the alcohol metabolism in the body (slows the breakdown of alcohol, hence the effects of alcohol are prolonged in the body). He was flying an aircraft that he was not totally familiar with, and all his tell-tale readiness checklists were not present to help him where they usually presented themselves before flight, and he was in a rush to pick up his friend from an airport only 20 miles away before a line of thunderstorms came through (that friend owned the Cherokee).

Now you see that in his cards all the holes had lined up (Figure 1). A careful, analytic mind reduced in alacrity, unencumbered by the weight of his previous knowledge through the harmful effect of persistent alcohol in his body, failed to see the cues of impending disaster. Having found none of the patterned elements that had kept him safe all along, his clouded brain edged him on that day and sought to play its own game of chance.

There are many lessons to learn from this story. My own guidelines are as follows; add on to them as you please:

- Know your limits
- Observe those limits
- Develop good habits – use checklists
- Follow those habits
- Rectify a "getting away" scenario; do not amplify it
- Be constructively critical of each flight
- Even the best pilots make mistakes – minimize the number and break the chain
- Always think about where is the possible error
- If intuition tells you something is wrong, prove the intuition to be wrong before proceeding. Intuition is mostly right.
- Alcohol, with or without medicines, is dangerous
- Ground yourself voluntarily if you need to for any medical reason. Death is not an option.
- Improve technique; periodically practice safe flight with an instructor
- If flying a different aircraft, become thoroughly familiarized with it before flight
- Do not violate the rules; they are the products of previous tragedies
- Good decisions are born of good judgments, and good judgments are born of prepared, rested, and alert minds

Fly safe – always

*Dr. Dara is an aviation medical examiner who specializes in hematology and oncology in Toms River, N.J.; he is also a pilot with the ratings of Airline Transport Pilot, Certified Flight Instrument Instructor, and Multi-Engine Instrument with more than 2,400 hours in the air. He is a director of the Mooney Aircraft Pilot Association and a frequent speaker at ground and flight safety seminars.*

*This article originally appeared in the Fall 2002* Federal Air Surgeon's Bulletin.

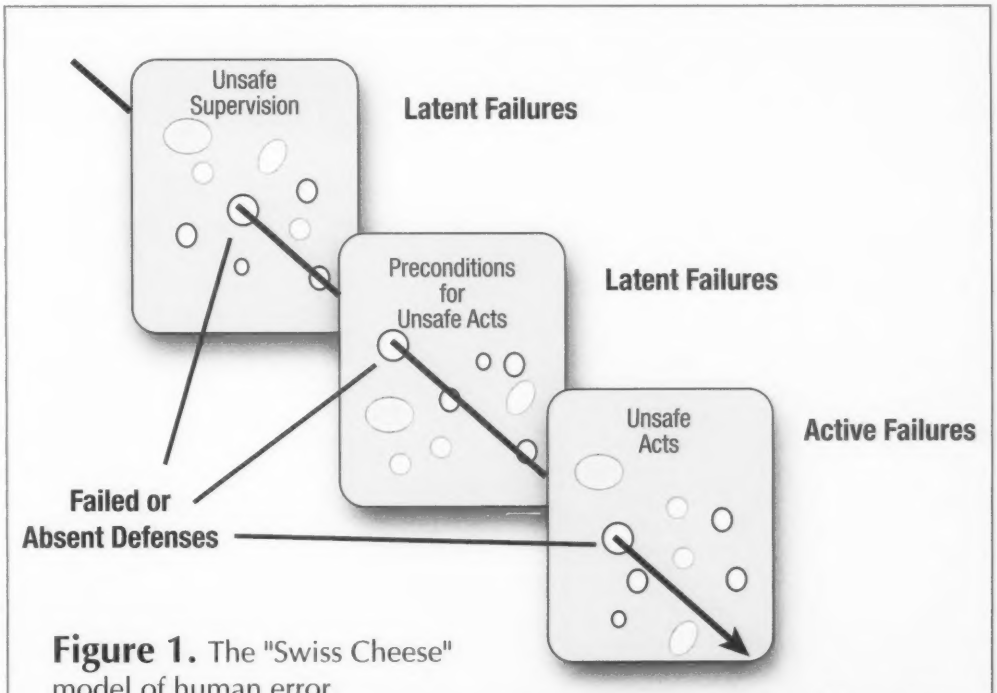
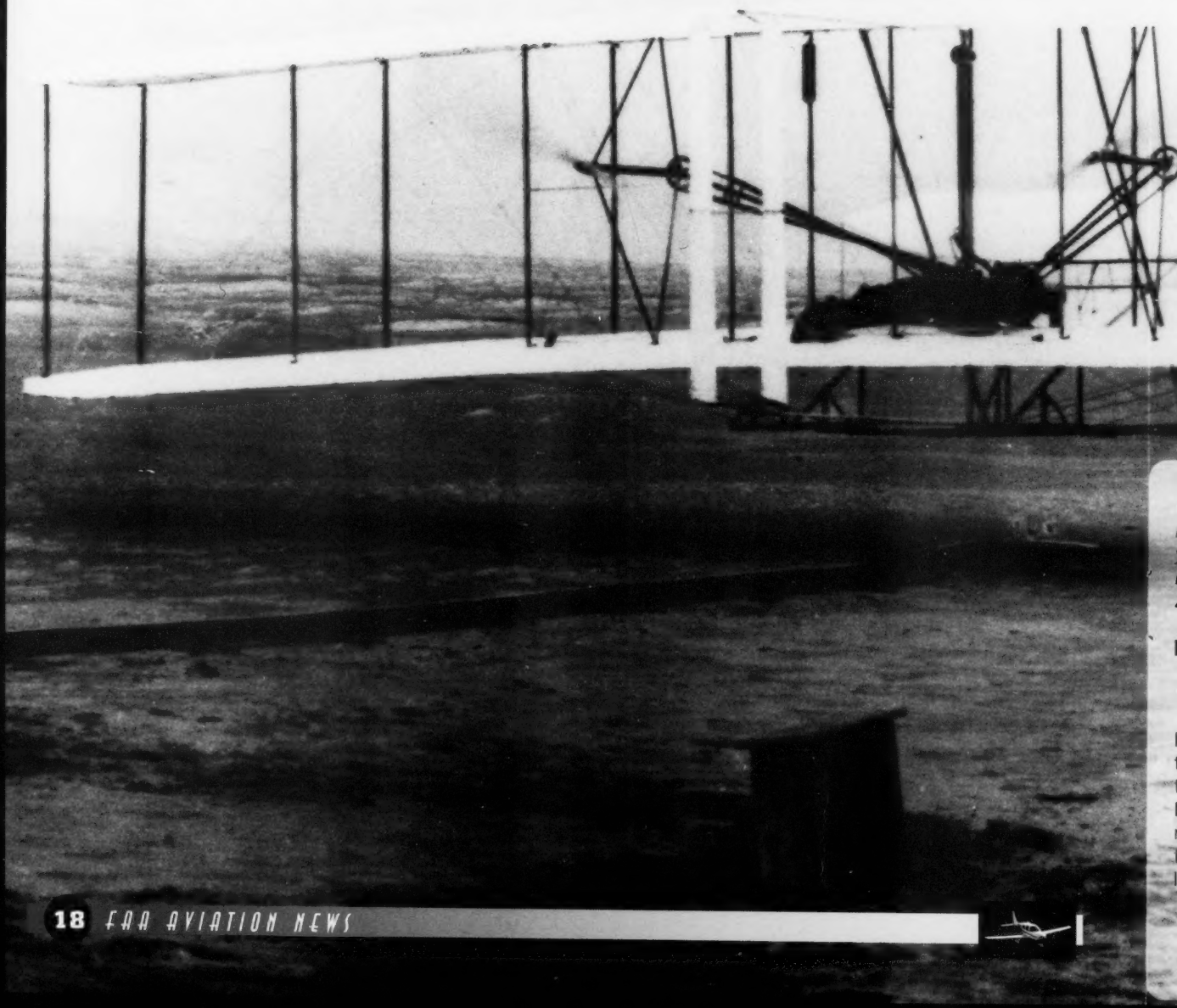



**Figure 1.** The "Swiss Cheese" model of human error causation (Shappell & Wiegmann, 2000).

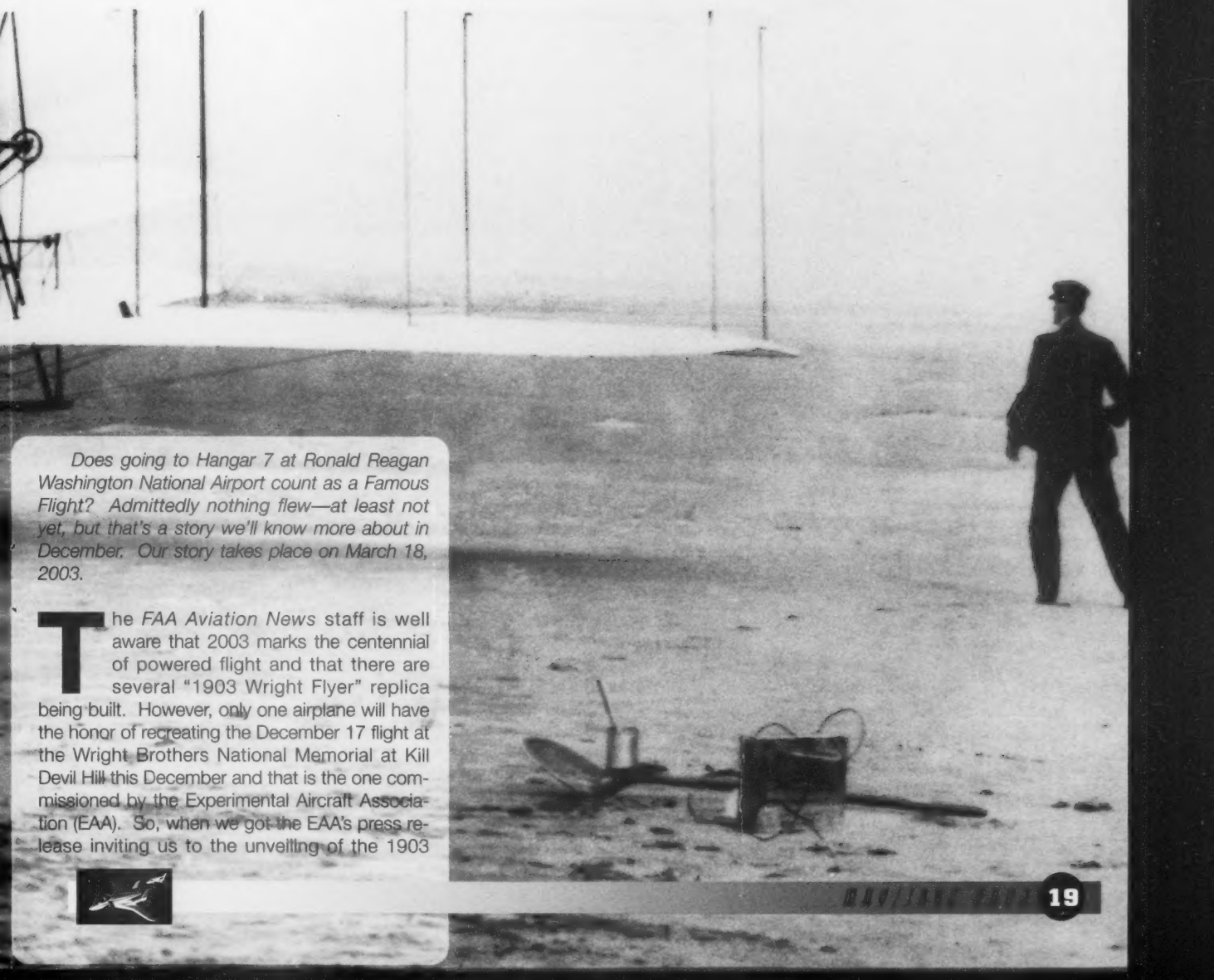
**MISHAP**

# Countdown t



# to Kitty Hawk

by Louise Oertly



*Does going to Hangar 7 at Ronald Reagan Washington National Airport count as a Famous Flight? Admittedly nothing flew—at least not yet, but that's a story we'll know more about in December. Our story takes place on March 18, 2003.*

The *FAA Aviation News* staff is well aware that 2003 marks the centennial of powered flight and that there are several "1903 Wright Flyer" replica being built. However, only one airplane will have the honor of recreating the December 17 flight at the Wright Brothers National Memorial at Kill Devil Hill this December and that is the one commissioned by the Experimental Aircraft Association (EAA). So, when we got the EAA's press release inviting us to the unveiling of the 1903

*Mario Toscano photo*

Wright Flyer reproduction to kick off the Countdown to Kitty Hawk, the decision to go was easy.

"The eyes of the world will be on EAA's Wright Flyer this coming December 17 as we attempt to re-create the Wright brothers' first-powered flight on the dunes of North Carolina," said EAA President and U.S. Centennial of Flight Commissioner Tom Poberezny. "This Wright Flyer reproduction represents a long-standing commitment by EAA and its partners to preserve the Wright brothers' legacy and their unbridled spirit of innovation that forever changed our world."

The Wright Experience was organized in late 1998 to rediscover the secrets of the Wright bothers pioneering work in aviation. This Warrenton, Virginia, based organization was commissioned by the EAA to build the 1903 Wright Flyer and has spent long hours of meticulous research and craftsmanship to create the most exact replica of the 1903 Wright Flyer ever made. This includes the "original" presently hanging in the National Air and Space Museum. The 1903 Flyer crashed on its fifth flight and was repaired years later by Orville Wright using whatever materials were on hand.

The challenge that The Wright Experience faced was that the Wright brothers left no permanent records of their original Flyer. To ensure that the replica was as close to the original as possible, information was gathered from the brothers' notes, correspondence, and documents that are now scattered in a variety of locations. They even used high-resolution scans of the photographs taken by the Wright's of their experiments to reveal some of the brothers' secrets. Ken Hyde, a retired airline pilot and co-founder of The Wright Experience, said, "It's pretty easy to build a Wright Flyer replica that looks like the first plane, but it's very difficult to build one that is an exact reproduction. Building this Flyer was the ultimate reverse engineering job with a major catch—we had to ignore what we had learned over the past 100 years and embrace the Wright brothers' way of thinking."

Another major challenge the Wright Experience had to overcome was matching the fabric the Wrights used on the original Flyer. "Pride of the West" muslin was very tightly woven, had low porosity, and was chiefly used for women's undergarments. The challenge was this fabric is no longer made and an exact fabric match was important in order to duplicate the flight test data. Fortunately, a Wright descendant lent Hyde a swatch of the original cloth to help facilitate matching it.

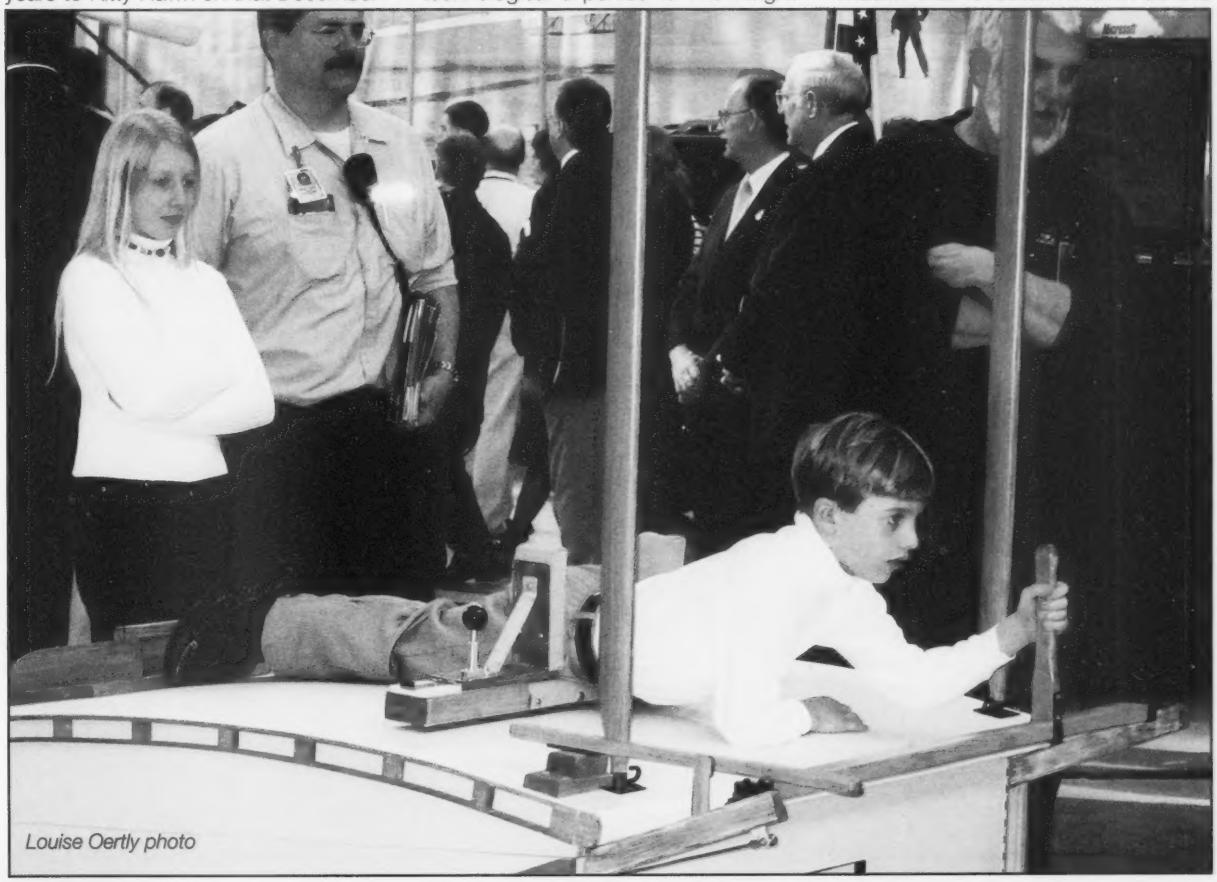
The main difference between this Wright Flyer and the other Flyer projects is that The Wright Experience is not making any modifications to the Wrights' original design in the name of aerodynamics or 100 years of aviation lessons learned. Wind tunnel testing by Old Dominion University in Virginia has shown that the Flyer is unstable

on all three axes. The aviators who are training to pilot the Flyer will have to forget everything they have learned about flying an aircraft. Actually, from what was said at the press conference, non-pilots have a better chance of flying this aircraft, because of their lack of aviation knowledge. Which leads to the next question, how are these pilots going to be trained?

Another sponsor of the Countdown to Kitty Hawk is Microsoft®, who has developed the "Microsoft® Flight Simulator: A Century of Flight" software program and the 1903 Wright Flyer virtual cradle. That's right, there is now a Wright Flyer simulator (see photo below). If you check out the Microsoft® website about the Wright Flyer simulator, it tells you what you can expect when you are visiting the Countdown to Kitty Hawk Touring Pavilion (more on the Pavilion later). "The 'Cradle' takes you back 100 years to Kitty Hawk on that December afternoon when history's bumpy first [powered] flight conquered gravity. Lie on your stomach in front of a giant panoramic projection screen; take control of the hand levers and shift in the hip-cradle. You're piloting the Wright Flyer over the sand dunes of Kitty Hawk. Shifting, rough weather and difficult, unpredictable pilotage are very much a part of the experience."

Powered flight is not the only transportation milestone for 1903. It was also the year that the Ford Motor Company was founded and Ford itself would eventually play a major role in the history of flight. Jan Valentic, vice president of global marketing for Ford Motor Company, said, "With Henry Ford's strong ties with aviation history, we see Countdown to Kitty Hawk as an opportunity to focus on the progress in both automotive and aviation transportation over the past century." Ford Motor Company provided technological expertise to The Wright Experience project to ensure the authenticity of the Flyer reproduction. This included laboratory analysis of early Wright engine and materials to determine the types of materials needed to reproduce the Flyer. So it is not surprising that Ford, along with EAA, Microsoft®, and Eclipse Aviation, is one of the sponsors of the Countdown to Kitty Hawk Tour.

At this press conference, Ford unveiled the 2003 Lincoln Aviator Kitty Hawk Edition to commemorate the 100th anniversary of flight and Henry Ford's contributions to aviation history. It also played an important role when it was time to unveil the Wright Flyer reproduction. Hidden behind a curtain, the Lincoln Aviator slowly rolled out to the rear of the speaker's platform. Suddenly there appeared a wingtip and everyone realized that the trailer attached to the Aviator contained the 605-pounds of wood, steel, and muslin that is better known as the



*Louise Oertly photo*

Wright Flyer.

Another announcement was made at this news conference that Ford Motor Company, EAA, and Discovery Channel has formed a partnership to create documentaries to "celebrate the impact of the Wrights' first powered flight on the world, as well as to explore Ford Motor Company's crucial role in aviation history and the ingenuity of Henry Ford as he brought affordable ground and air transportation to the masses." These plans also include a live telecast from Kill Devil Hills, North Carolina, at 10:35 a.m.—the exact minute of that historic flight. The first manned, sustained, heavier-than-air flight lasted about 12 seconds at an estimated height of 120 feet. Unfortunately, we will have to wait and see if this exact reproduction will also duplicate that first flight.

What happens to the Flyer in 2004? Henry Ford's dream of displaying the original 1903 Flyer, along with the Wright's childhood home and cycle shop at The Henry Ford's Greenfield Village, will be fulfilled. The Wright Experience Flyer will become part of a permanent aviation exhibit at the Henry Ford Museum in Dearborn, Michigan.

*Amanda Wright Lane (center) talks about her great-uncles, Orville and Wilbur, while her brother Stephen Wright and Jan Valentic of* Ford Motor Company *look on.*

## EAA's Countdown to Kitty Hawk Touring Pavilion

This 24,000 square-foot exposition will celebrate the Wrights' first history-making flight with displays on the Wright brothers, aviation history, and aviation innovations along with activities for youth. The 1903 Wright Flyer reproduction will serve as the centerpiece of the exhibit and Microsoft's® 1903 Flyer flight simulator will allow would-be Flyer pilots "to operate from a horizontal hip cradle, using hand levers and a shifting hip mechanism to control virtual takeoffs and landing in front of a giant panoramic projection screen."

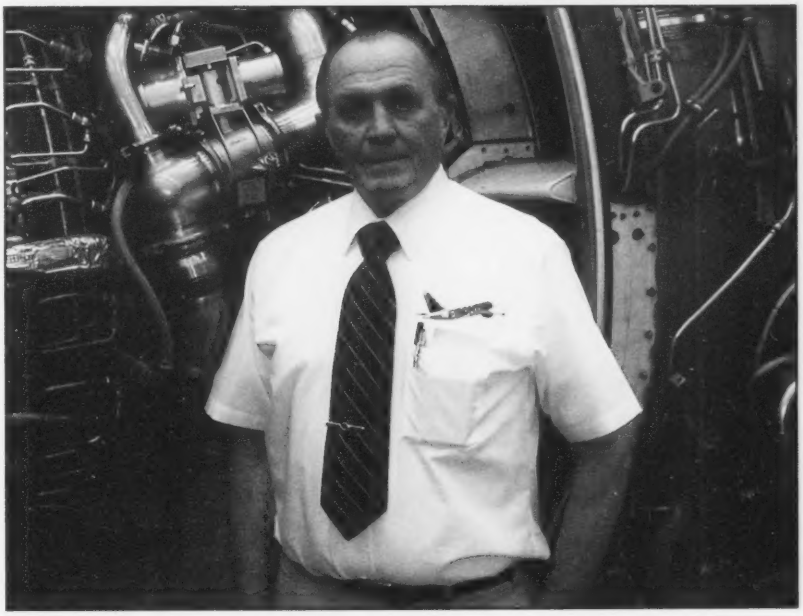
### Tour Stops for the Pavilion

| | |
|---|---|
| June 13-16 | Ford Motor Company's 100th Anniversary Celebration, Dearborn, MI |
| July 3-20 | Inventing Flight: Dayton 2003, Dayton, OH |
| July 29 – Aug. 4 | EAA AirVenture Oshkosh 2003, Oshkosh, WI |
| Aug. 23 – Sept. 1 | Museum of Flight, Seattle, WA |
| Oct. 7-9 | National Business Aviation Association's 56th Annual Meeting & Convention, Orlando, FL |
| Dec. 12-17 | First Flight Centennial Celebration, Kitty Hawk, NC |

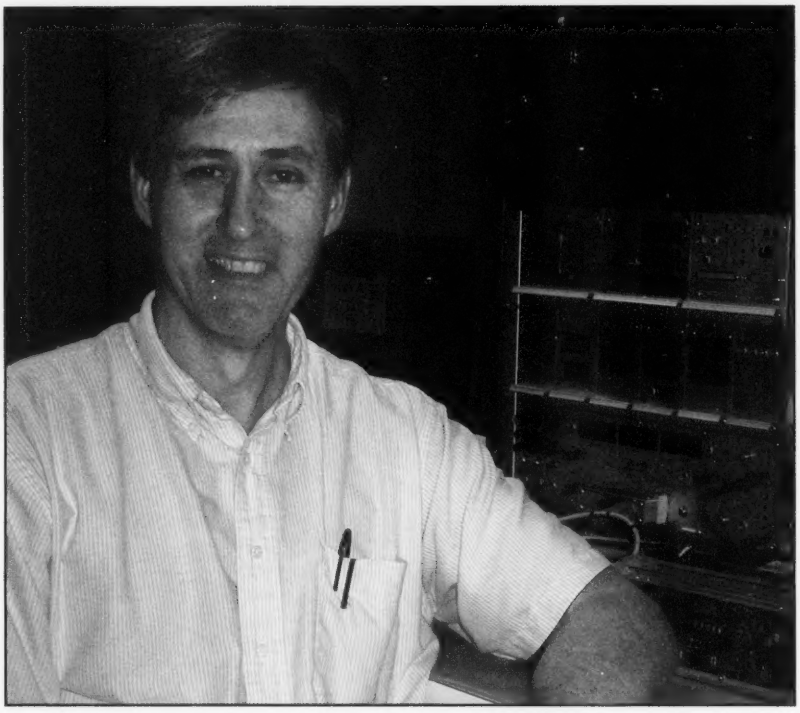
# 2003 GENERAL AVIATION AWARDS PROGRAM WINNERS ANNOUNCED

The 2003 General Aviation Industry Awards Program Committee has chosen William "Jeff" Edwards of Chesterfield, Missouri, as Certificated Flight Instructor of the Year; Thomas Hendershot of Littleton, Colorado, as Aviation Maintenance Technician of the Year, and Allison "Al" Ingle of Tallahassee, Florida, as Avionics Technician of the Year. A formal presentation by FAA Administrator Marion Blakey to the winners will take place on August 1 at AirVenture Oshkosh 2003 in Oshkosh, Wisconsin. Major Dorward "Jim" McDonald, USAF, who was chosen as FAA Aviation Safety Counselor of the Year (see the January/February 2003 issue of *FAA Aviation News*), will receive his award at the same time.

Jeff Edwards is the Certificated Flight Instructor of the Year. He has been a CFI since 1982 and is currently an aircraft accident investigator and president of AvSafe, a company specializing in aviation safety consulting. A former naval flight officer and corporate pilot, he is one of approximately 300 aviation educators worldwide who hold a Master Instructor designation. This professional designation is granted by National Association of Flight Instructors (NAFI) to outstanding aviation educators who demonstrate an ongoing commitment to excellence, professional growth, and service to the aviation community. He is a regular contributor to ABS, the American Bonanza Society's monthly publication, and teaches in the Society's pilot training program. When his local airport, Spirit of St. Louis (SUS), was recently threatened with noise restrictions, he helped lead an advocacy group that successfully reconciled the noise issues. He also serves as an FAA Designated Pilot Examiner as well as an Aviation Safety Counselor.



*Jeff Edwards (top), Certificated Flight Instructor of the Year and Tom Hendershot (below), Aviation Maintenance Technician of the Year. (Photos courtesy of EAA)*



*Al Ingle (above), Avionics Technician of the Year, and Major Jim McDonald (left), Aviation Safety Counselor of the Year. (photos courtesy of EAA)*

Tom Hendershot is the Aviation Maintenance Technician of the Year. He has airframe & powerplant certification with inspection authorization and has worked as an aviation professional for 47 years. The holder of FAA Bronze, Silver, Gold, Ruby, Diamond, and Diamond Medallion AMT awards of excellence, he conducts professional training courses industry-wide and creates curricula for institutions of higher education. At Frontier Airlines, Hendershot has mentored all of Frontier's maintenance technicians through the FAA Aviation Maintenance Technician Awards Program. He has also continued his own professional growth and development well beyond FAA minimum requirements. Recently, Hendershot was elected to the board of directors of the Professional Aviation Maintenance Association (PAMA). He is an active pilot and flight instructor with over 22,000 hours, but he also finds time to serve as an Operations and Airworthiness Aviation Safety Counselor.

Al Ingle is the Avionics Technician of the Year. He developed an interest in avionics as a grade school student but actually began his aviation career as a pilot and flight instructor. Since going into avionics full time more than 28 years ago, he has become a prolific author. Dozens of his articles have been published in *Avionics News*, the Aircraft Electronics Association's (AEA) monthly magazine. He is also nationally known as a designer of avionics test equipment, including the CA2100 Universal Test System, a modular system utilizing an IBM industrial computer and Ethernet hub. In 1978, Ingle founded Capital Avionics in Tallahassee, Florida. An FAA-approved repair station, Capital Avionics maintains avionics systems for many of the aircraft used by the State of Florida. They also have military contracts for the maintenance of avionics components on some presidential aircraft. Ingle has been a member of the Aircraft Electronics Association for more than 20 years and currently serves as the association's treasurer.

The national awards program is a cooperative effort between the FAA and the aviation industry. The awards are presented annually to reward outstanding contributions to the aviation industry by a certificated flight instructor, an aviation maintenance technician, and an avionics technician in promoting safety and education. The winners are selected from FAA regional winners and are chosen by a national selection committee of aviation professionals. Nomination forms are available from your local FAA Aviation safety program manager and need to be submitted by December 31, 2003, to be eligible for the 2004 awards.

# A Checklist for Pilots Approaching the Flight Physical

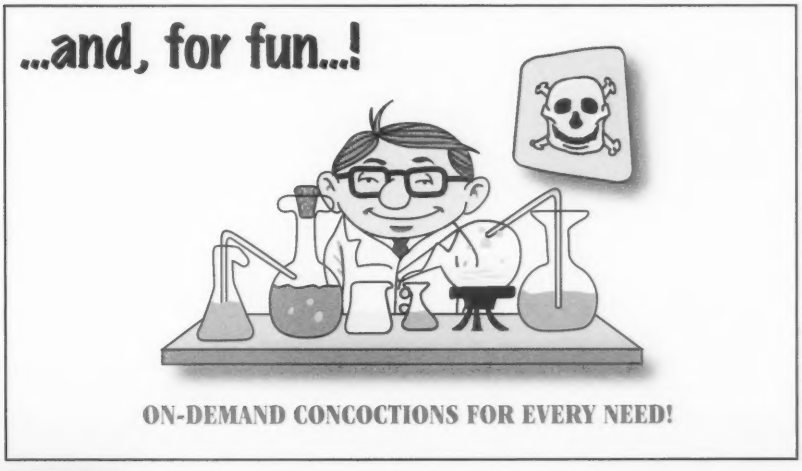
## Preparing for a Medical Certification Physical and Avoiding the Guesswork

by Robert J. Gordon, DO, Senior AME
Edited by Donald Ross, DO, Senior AME

*This checklist was prepared by two long-time aviation medical examiners who know the value of good preparation by the applicant for medical certification. Although this checklist is not an FAA-generated or approved device, you might want to consider making a similar checklist available to your pilots. -Ed*

Pilots, your aviation medical examiner (AME) wants you to pass your medical exam. We know how important that continuing to fly is to you because most of us are pilots too. If you have any problems, your AME, the FAA, and your personal physician will work with you to resolve them. We want you to be happy pilots and to leave our office with your medical certificate in hand. With that in mind, here is a checklist to follow during your approach to landing in our office. If you follow it, taking off again will be a piece of cake.

- Do not forget your eyeglasses.
- Make sure you have a current eye exam and glasses, especially if your near/far vision has changed.
- Bring your Special Issuance letter from the FAA with you to the exam.
- If you have a Special Issuance medical, mail in all necessary medical information requested by the FAA by the required date.
- Bring all medical information outlined in your Special Issuance letter.
- Do not forget to tell your AME if you have one of the 15 disqualifying conditions: diabetes mellitus requiring hypoglycemic medications; angina pectoris; coronary heart disease that has been treated or, if untreated, that is symptomatic or clinically significant; myocardial infarction; cardiac valve replacement; permanent cardiac pacemaker; heart replacement; psychosis; bipolar disorder; personality disorder that is severe enough to have repeatedly manifested itself by overt acts; substance dependence; substance abuse; epilepsy; disturbance of consciousness without a satisfactory explanation of the cause; and transient loss of nervous system function(s) without a satisfactory explanation of the cause.
- Bring ALL required medical records from your personal physician regarding any chronic medical condition. (Examples: hypertension and asthma)
- See your personal physician for evaluation and treatment prior to medical exam if you have borderline high blood pressure.
- Avoid coffee, decongestants, cigarettes, or any other stimulants prior to your exam. These all may raise your blood pressure.
- If you have a family history of diabetes mellitus (or other familial diseases), you need to have periodic checks with your personal physician prior to medical exam.
- If you have a family history of diabetes mellitus, avoid large amounts of sugar prior to the exam. Urinalysis will show positive sugar if large amounts are consumed prior to exam.
- Mark on question 17a. (under Medications) if you are taking a prohibited medication on a regular basis.
- Do not forget your SODA (Statement of Demonstrated Ability; e.g., color vision defect).




*This article originally appeared in the Fall 2002* Federal Air Surgeon's Medical Bulletin.

# Something To Think About

by H. Dean Chamberlain

As we have reported in past issues, the satellite-based monitoring of emergency distress beacons that transmit on the 121.5 MHz frequency is scheduled to terminate in 2009. For pilots, this means if your emergency locator transmitter's (ELT) primary frequency is 121.5 MHz, it will not be received by one of the Cospas-Sarsat system's satellites after the termination date. In real terms, this means there could be a longer delay in search and rescue forces responding to your accident. There is also the risk that no one will detect your distress signal. You might be on your own until someone reports you missing if you have not filed a flight plan and, if it is a VFR flight plan, activated it.

Once the satellites' 121.5 MHz processors are turned off, aircraft with a 121.5 MHz ELT onboard will have to depend upon over-flying aircraft and nearby air traffic control (ATC) facilities monitoring 121.5 MHz. The aircraft or facility receiving a 121.5 MHz ELT alert will have to notify appropriate authorities. Airborne pilots detecting the characteristic swept-tone of an ELT should notify the ATC facility they are communicating with or the nearest ATC facility or Flight Service facility. Normally the ATC facility will ask you for the time, location, and signal strength among other things when you report an ELT signal.

With the pending termination of the space-based monitoring of 121.5 MHz distress beacons—land, sea, and air— many within the search and rescue community expected FAA to mandate the installation of 406 MHz ELT's. The Cospas-Sarsat satellite system will continue to monitor 406 MHz distress beacons. FAA's position is that since both 121.5 and 406 MHz ELT's are approved for installation in aircraft to meet the carriage requirement of 14 Code of Federal Regulations (CFR) section 91.207, aircraft owners can install a 406 MHz whenever they want.

The reason many aircraft owners give for not installing a 406 MHz ELT is cost. The newer, more powerful digital 406 MHz ELT cost many times the cost of an analog 121.5 MHz ELT. In some cases, a 406 MHz ELT can cost 10 or more times the cost of a 121.5 MHz ELT. At some point, a new 406 MHz ELT becomes real money for your typical general aviation pilot. There is some good news about the price of 406 MHz ELT's.

The good news is some 406 MHz ELT's are coming down in price. If you have not checked the prices for new ELT's recently, prices are starting to decline. Will a 406 MHz ELT ever come down to the $200 price tag of some 121.5 MHz ELT's? I doubt it in the foreseeable future. But one brand has listed a price of about $1,500 for one of its 406 MHz ELT's. Others may soon follow. The development of low cost 406 MHz distress beacons (air and sea) is a hot topic in the global search and rescue (SAR) community.

The latest cost for a 406 MHz ELT is about the cost of a good laptop personal computer. The question for many GA aircraft owners is what is the cost of having an ELT onboard that will be detected by the Cospas-Sarsat satellite in 2009 or put another way; what is the price you are willing to pay to be rescued in a timely manner. Since life expectancy decreases with increased time to rescue, a quick alert and fast recovery may mean the difference between life and death. That is one reason for this article. Now is the time to consider your options. For example, you can save a dollar a day between now and 2009 and have the money to pay for a new 406 MHz ELT. That is one way to protect yourself. Another is to consider a 406 MHz ELT if your current 121.5 MHz ELT needs to be replaced. Even today, because of the number of 121.5 MHz distress false alerts, SAR forces normally don't respond to a 121.5 MHz distress sig-

nal until further validation that can take hours. 406 MHz alerts receive priority processing that may only take minutes.

Another way to help yourself, please note we are saying help and not protect yourself, is to consider a new distress beacon being approved for use in the United States (U.S.) on July 1, 2003. That is the date the Federal Communications Commission (FCC) has authorized the use of personal locator beacons (PLB) in the U.S. Personal locator beacons will transmit on a primary frequency of 406 MHz with a low-powered 121.5 MHz homing beacon built in.

Although a PLB will not meet the ELT carriage requirement for airplanes, it might provide a backup to your 121.5 MHz ELT. Are we saying to buy a PLB instead of a 406 MHz ELT? No, the preferred purchase is a new 406 MHz ELT. However, if you have no plans to install a 406 MHz ELT unless the FAA mandates you install one, a 406 MHz PLB might provide the life saving edge you need. Please note, we are saying a PLB could be a backup device. The reason we are saying it could be a backup device is that you have to manually activate it. ELT's are designed to self-activate upon impact. A PLB has to be activated. If you survive the crash but are either unconscious or trapped and cannot reach your PLB, your PLB can't help you. But if you can safety activate it, no danger of fire from your ruptured fuel tanks for example, it could provide the quick 406 MHz distress signal you need for a quick rescue. This is particularly true if you crash in mountainous terrain that can block the line of sight of your 121.5 MHz ELT signal to a ground ATC facility once you lose the protection of overhead satellite monitoring. You can also forget using your cellular telephone if you are out of range of a receiving tower.

In reviewing PLB sales data, there are two general classes of PLB's. One is designed for maritime use and floats. The other is for land use and may or may not float. The price listed for PLB's in one catalog was in the $500 to $600 range.

Like all 406 MHz distress beacons, PLB's will contain a low-powered 121.5 MHz homing beacon. An interesting feature of the PLB low-powered 121.5 MHz homing beacon is its unique "P" Morse code signal. The letter "P" will be encoded to distinguish a PLB from an ELT or maritime emergency position indicating radio beacon (EPIRB).

The FCC's Part 95, Personal Radio Services, new Subpart H-Personal Locator Beacons (PLB) is the regulatory basis for PLB's. The authority for Part 95 is Secs. 4, 303,48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.

Like other 406 MHz digital distress beacons that transmit their own unique digital identification code, PLB's will have to be registered with the National Oceanic and Atmospheric Administration (NOAA). It is this digital code that makes 406 MHz distress beacons so popular with SAR forces worldwide. This identification code allows SAR forces to contact the registered owner of a 406 MHz distress beacon to determine the status of an alert. This ability to contact the owner of a 406 MHz distress beacon also reduces the problems and search requirements needed in case of an inadvertent activation of a 406 MHz beacon. A telephone call may resolve a 406 MHz false alert or confirm an actual emergency situation. That is not true with the older analog 121.5 MHz distress beacons. Since they have no unique coding, the only way to find such beacons is to physically search for the 121.5 MHz ELT. Add in the number of false alerts, 97 to 98 percent, for 121.5 MHz ELT's and you begin to understand why SAR forces aren't fond of 121.5 MHz distress beacons.

*FAA Aviation News* is working with the U.S. Air Force Rescue Coordination Center (AFRCC) at Langley AFB on an article about PLB's. The AFRCC is the lead organization in developing a rescue response plan for PLB's. This will be done at the individual state level. We will publish more information on PLB's and the developing state rescue plans in an upcoming issue.

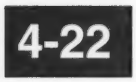
PLB's may be your low-cost survival edge.

# RUNWAY SAFETY CORNER

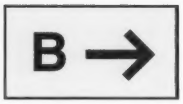
## Airport Signs and Markings Quiz

*Now that the flying season is here and more people are taking to the sky, let's test your knowledge of airport signs and markings. Match the definition on the right with the symbol on the left.*

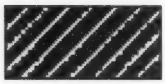
_____



_____



_____


_____

_____

_____

_____

### Pilot Action/Sign Purpose/Location

1. Do not cross unless clearance has been received (towered airport) or until clear (non-towered airport). At runway/runway intersections, hold-short if land and hold-short clearance has been accepted. Located on taxiways at intersection with runway and at runway/runway intersection.

2. Do not enter. Identifies paved areas where aircraft entry is prohibited. Located in areas where aircraft are forbidden to enter.

3. These signs are used on controlled airports to identify the boundary of the runway protected area. It is intended that pilots exiting this area would use this sign as a guide to judge when the aircraft is clear of the protected area. Located at the edge of protected area for runway.

4. On taxiways, this provides direction to turn at next intersection to maneuver aircraft onto named taxiway. On runways, provides direction to turn to exit runway onto named taxiway.

5. Provides general taxiing direction to identified destination. Other destination signs include directions to taxiway or runway.

6. Land and hold short point for other than intersecting runways as instructed by air traffic control.

7. Taxiway ending marker indicates taxiway does not continue

Answers to the quiz can be found on page 36.

H. Dean Chamberlain photo

# Aviation Maintenance Alerts

## Cessna Single-Engine Throttle Controls

The FAA has received a report, from an international authority, of a single-engine Cessna airplane that had the throttle control separate from the rod end that is attached to the carburetor. This airplane, like many others, but not all single-engine airplanes manufactured by Cessna, was equipped with a mechanism that enables the engine to automatically revert to full power when the throttle becomes disconnected from the fuel metering unit.

The FAA previously issued Airworthiness Directive (AD) 86-24-07 on the single-engine controls installation applicable to Cessna airplanes as well as Advisory Circular (AC) 20-143, Installation, Inspection, and Maintenance of Controls for General Aviation Reciprocating Aircraft Engines. The FAA also previously revised Title 14 of the Code of Federal Regulations (14 CFR) part 23, sections 23.1143(g) and 23.1147(b) to address the need for continued safe flight and landing in the event of a control separation at the engine fuel-metering device. These current rules are not applicable to older in-service airplanes.

The manufacturer's service information and the FAA's ACs and ADs are the methods used to alert field maintenance personnel of the importance of providing adequate maintenance on in-service aircraft. The FAA continues to evaluate the reliability of engine-control installations applicable to small airplanes. The number of adverse reports applicable to these problems have reduced since the issuance of enhanced maintenance instructions, ACs, and ADs applicable to the controls installed on reciprocating-engine airplanes.

Continued vigilance on the part of those individuals involved in inspection and maintenance must be maintained in order to keep the number of adverse reports associated with these components to a minimum. It should be noted that while some of the engines will revert to full power/mixture to enable continued safe flight and landing, many of the airplanes previously and currently produced primarily rely on proper maintenance of engine controls to ensure an adequate level of safety.

*This article was provided by the FAA Aircraft Certification Office (ACO) Airframe, Propulsion and Services (ACE-118W) located in Wichita, Kansas.*

# Service Difficulty Report Data

This is a selection of the reports printed in the *Aviation Maintenance Alerts*. These reports are derived from unverified information submitted by the aviation community with FAA review for accuracy.

**ACFT MAKE** **ENG MAKE** **COMP MAKE** **PART NAME** **PART CONDITION** **DIFF-DATE** **TTIME**
**ACFT MODEL** **ENG MODEL** **COMP MODEL** **PART NUMBER** **PART LOCATION** **OPERCTRL NO** **TSO**
**REMARKS**

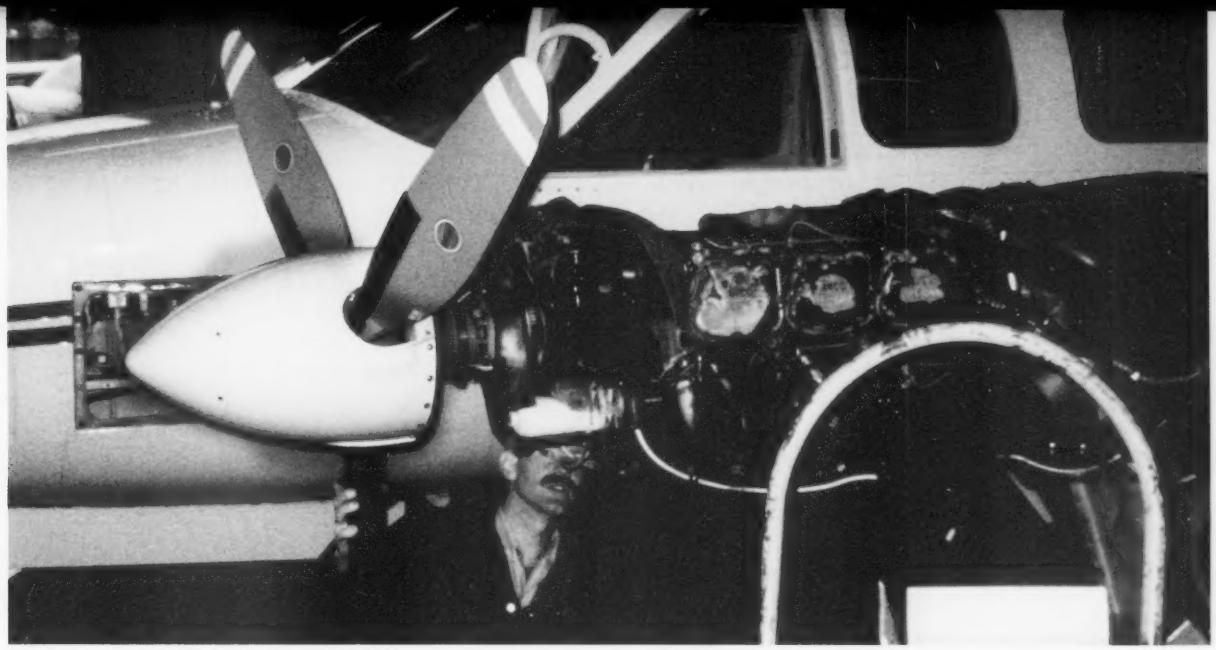
CONT GEAR WRONG PART 09/27/02
W6706A 3979 CAMSHAFT 2003021500006
ENGINE STOPPED RUNNING DUE TO A FAILED INTERMEDIATE CAM DRIVE GEAR. UPON DISASSEMBLY IT WAS FOUND THAT A PN 3979 GEAR FROM A TANK ENGINE HAD BEEN SUBSTITUTED FOR THE PN A3062. AIRCRAFT ENGINE GEAR WHICH SHOULD HAVE BEEN USED. TANK IGNITION DRIVE GEARS HAD BEEN USED AS WELL IN PLACE OF THEIR AIRCRAFT COUNTERPARTS. THE TEETH HAD SHEARED FROM THE INTERMEDIATE CAM DRIVE GEAR CAUSING THE CAM TO STOP TURNING AND ENGINE QUIT RUNNING.

AMD GE TRANSMITTER FALSE INDICATION 12/27/2002
FALCON20 CF7002D2 11346AA RT ENGINE OIL 2003020400131
(CAN) DURING TAKE-OFF ROLL THE PILOT IN COMMAND NOTICED OIL PRESSURE FLUCTUATION OF THE RT ENGINE. THE PILOT IN COMMAND INITIATED REJECTED TAKE-OFF. AT THIS TIME, THE FLIGHT CREW ADVISED ATC AND RETURNED TO THE MAINTENANCE FACILITY. OUR CONTRACTED AMO HAS DETERMINED THAT THE OIL PRESSURE TRANSMITTER IDENTIFIED AS AT FAULT, THEREFORE GIVING A FALSE OIL PRESSURE INDICATION TO THE FLIGHT CREW. THE OIL PRESSURE TRANSMITTER WAS REPLACED WITH A SERVICEABLE UNIT. THE AIRCRAFT WAS GROUND RUN SATISFACTORILY AND WAS RETURNED INTO SERVICE TO RESUME OPERATIONS.

BEECH PWA SKIN CRACKED 01/27/03
100BEECH PT6A28 9913000011 RT AILERON 2003021400100
(CAN) A 1.5 CENTIMETER CRACK FOUND RADIATING FROM A RIVET ON SECOND RIB FROM INBOARD EDGE AND LAST RIVET HOLE BEFORE THE TRAILING EDGE. ANOTHER .5 CENTIMETER CRACK IN SKIN FOUND RADIATING FROM THE SECOND RIVET FROM THE TRAILING EDGE ON THE THIRD RIB. THE CRACKS WERE DIFFICULT TO SEE BUT WERE INDICATED BY THE PAINT. THE SKIN HAD BEEN REPLACED AND HAD 870. 2 HOURS SINCE NEW. BEECHCRAFT IS BEING CONTACTED TO DISCUSS ANY WARRANTY OPTIONS.

BELL HOSE CHAFED 02/05/03 3447
407 23063412 ENGINE 2003021900112
THIS HOSE DETERIORATES RAPIDLY DUE TO THE FACT THAT THE HOSE IS A CORRUGATED TUBE HOUSED IN A STEEL BRAID THAT CHAFES THE TUBE CAUSING CHAFE DAMAGE TO THE HOSE AND SUBSEQUENT OIL LEAK. THIS HOSE SHOULD BE REDESIGNED TO EXTEND RELIABILITY. THE HOSES LAST ABOUT 2 YEARS, 1,000 HOURS.

BRAERO SQUAT SWITCH FAILED 01/07/03 4274
BAE125800A 1EN114N119 MLG 2003020600104
AFTER 2 HOURS INTO FLIGHT AT A CRUISE ALTITUDE OF FL370, THE CABIN ALTITUDE SUDDENLY STARTED TO CLIMB AT A RAPID RATE. THE CABIN ALTITUDE WARNING SOUNDED, THE PAX O2 MASKS DROPPED, THE CREW IMMEDIATELY DONNED THEIR MASKS AND STARTED AN EMERGENCY DESCENT. AFTER STABILIZING BELOW 10,000 FT, THE CREW NOTICED OTHER INDICATIONS THAT LED MAINTENANCE TO THE SQUAT SWITCH. UPON LANDING AT THE NEAREST AIRPORT, MAINTENANCE FOUND THE LEFT SQUAT SWITCH HAD FAILED, CAUSING THE AIRPLANE TO THINK IT WAS ON THE GROUND, AND CAUSING THE CABIN VENTURI TO TURN ON, WHICH OPENED THE OUTFLOW VALVE.



| | | | | | |
|---|---|---|---|---|---|
| CESSNA | LYC | BUSHING | UNSECURE | 01/28/03 | 984 |
| 172RG | O360* | 24900022 | MLG ACTUATOR | 2003021900188 | |

DURING 100HR INSPECTION, TECHNICIAN FOUND THE LT MLG ACTUATOR CAP BUSHING. UNSEATED AND STICKING OUT OF THE ACTUATOR CAP. DURING RETRACT TEST, IT WAS FOUND THAT THE BUSHING NOW INTERFERED WITH THE BRAKE SWIVEL FITTING. THE CAP WAS REMOVED AND A NEW BUSHING WAS INSTALLED IAW SEB AND SERVICE KIT. ACCOMPLISHMENT INSTRUCTIONS 99. 9 HOURS LATER, THE SAME CONDITION WAS FOUND AGAIN, THIS TIME IN BOTH ACTUATOR CAPS. AGAIN, BOTH BUSHINGS WERE REPLACED. IT IS POSSIBLE THAT THE EC1300L ADHESIVE CALLED FOR IN SK172-151 IS NOT COMPATIBLE WITH THE GREASE OR HYDRAULIC FLUID FOUND IN THE ACTUATORS. ALL PARTS WERE THOROUGHLY CLEANED PRIOR TO INSTALLATION.

| | | | | |
|---|---|---|---|---|
| DHAV | PWA | TORQUE TUBE | MISREPAIRED | 01/22/03 |
| DHC2MK1 | R985AN14B | C2T29A | ELEVATOR | 2003021400106 |

(CAN) PART WAS ACTUALLY REMOVED FROM STOCK FOR INSTALLATION ON A/C, BUT WOULD NOT FIT. IT WAS TAGGED AS 'USED SERVICEABLE.' IT APPEARS AS IF THE END LEVER HAD BEEN HOME MADE AND WELDED ON TO THE TUBE. ALSO PREVIOUSLY WORN ATTACHING HOLES HAD BEEN 'REPAIRED' BY THE WELDING OF WASHERS TO THE LEVERS. THE MECHANIC TRYING TO INSTALL THE UNIT REJECTED IT.

| | | | | |
|---|---|---|---|---|
| HELIO | | FITTING | CRACKED | 01/29/03 |
| H295 | | 3910104001 | WING | 2003020500148 |

UPPER WING ATTACH FITTING IS CRACKED. THE CRACKS APPEAR ON THE FACE OF THE FITTINGS THAT GO AGAINST THE SPAR CARRY THRU. IN SOME CASES THE CRACKS CAN BE DETECTED INSIDE THE BARREL NUT BORE. WE HAVE BEGUN CHECKING SPARE WINGS IN STORAGE AS WELL AS FLIGHT LINE AIRCRAFT. TO DATE WE HAVE FOUND 9 CRACKED FITTINGS. TIMES IN SERVICE RANGE FROM 5087 TO OVER 16,000 HOURS. CRACKS WILL OFTEN RUN PARALLEL TO THE AXIS OF THE BARREL NUT. SOME FITTINGS EXHIBIT A CIRCULAR BRINNELED AREA WHERE THE FITTING CONTACTS THE CARRY THRU. CRACKS CAN APPEAR IN THE CIRCUMFERENCE OF THE IMPRESSION OR RADIATE IN OR OUT FROM THE CIRCUMFERENCE OF THE IMPRESSION.

| | | | | | |
|---|---|---|---|---|---|
| LEAR | GARRTT | CLIP | BACKED OUT | 01/27/03 | 1372 |
| 45LEAR | TFE7313 | C1444881 | TE FLAPS | 2003021900048 | |

LEFT FLAP OUTBOARD LOWER ACTUATOR COVER PLATE FOUND DISTORTED AND BENT. UPON INVESTIGATION FOUND CIR-CLIP FOR LOWER GIMBLE PIN MISSING. THIS MISSING CLIP ALLOWED GIMBLE PIN TO

DROP DOWN. WHILE PIN WAS BACKING OUT AND DURING FLAP OPERATION DAMAGED OCCURRED TO THE FLAP ACTUATOR COVER PLATE AND FLAP STRUCTURE. REPLACED POWER UNIT-FLAP DRIVE. COMPLETED REPAIR STO COVER PLATE AND FLAP STRUCTURE PER LEAR INSTRUCTIONS. SUGGEST INSPECTION FOR CIR-CLIPS AT AN INCREASED INTERVAL.

| | | | | |
|---|---|---|---|---|
| PIPER | LYC | GOVERNOR | MALFUNCTIONED | 06/04/02 |
| PA31 | TIO540J2B | H210800 | PROPELLER | 2003020100037 |

(CAN) SLIGHT RPM HUNTING ON RT ENGINE AT CLIMB OUT POWER. PROP GOVERNORS WERE SWITCHED TO SEE IF PROBLEM WOULD MOVE. ENDED UP SENDING GOVERNOR OUT FOR REPAIR.

| | | | |
|---|---|---|---|
| RAYTHN | WIRE | CHAFED | 02/17/03 |
| HAWKER800XP | | ELT | 2003021900023 |

DURING INSPECTION WITH TAIL CONE REMOVED DISCOVERED ELT WIRING HARNESS CHAFING HARD ON AFT SIDE OF NR 2 MAIN OXYGEN BOTTLE.

| | | | | | |
|---|---|---|---|---|---|
| RKWELL | ALIDSG | SWITCH | INOPERATIVE | 01/23/03 | 5320 |
| NA26565 | TFE7313AR | 4014305 | STAB TRIM | 2003020600110 | |

PILOT'S TRIM SWITCH BECAME INTERMITTENT AND THEN FAILED TO OPERATE COMPLETELY IN FLIGHT. CO-PILOT AND ALTERNATE TRIM SYSTEMS BOTH REMAINED FUNCTIONAL. TESTED AND REPLACED PILOT'S TRIM SWITCH AT DESTINATION. SYSTEM FUNCTIONED PROPERLY AFTER REPLACEMENT OF SWITCH.

| | | | |
|---|---|---|---|
| SAAB | MOTOR | FAILED | 12/01/02 |
| SF340A | M3348A1 | FAN | 2003020400223 |

FAN RETURNED TO MFG FOR OVERHAUL. WHEN FAN WAS TESTED, IT FAILED THE MINIMUM RPM REQUIREMENTS, WHEN IT WAS DISASSEMBLED, IT WAS DISCOVERED THAT THIS OVERHAULED UNIT HAS NOT BEEN OVERHAULED IAW THE MM. THE ARMATURE IS NOT OF DAE DESIGN. OVERHAUL MANUAL DOES NOT ALLOW FOR THE REWINDING OF THE ARMATURE OR THE REPLACEMENT OF PARTS OTHER THAN LISTED.

| | | | | |
|---|---|---|---|---|
| SWRNGN | GARRTT | VALVE | DEFECTIVE | 01/08/03 |
| SA226T | TPE331* | 91003 | LT TE FLAPS | 2003020500064 |

AIRCRAFT ROLLED LT AFTER FLAPS WERE DEPLOYED FOR 30 SECONDS, INTERMITTENTLY. FOUND LT LOCK OUT VALVE DEFECTIVE. VALVE WAS GROUND PRESSURE TESTED AND IT FAILED THE TEST. REPLACED LOCK OUT VALVE. THIS PART NEEDS TO BE PUT ON THE REQUIRED OVERHAUL SCHEDULE.

***The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products and can be found on the Web at <http://afs600.faa.gov>. Click on "Alerts (AC43-16)." The monthly contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports, Service Difficulty Reports, and Maintenance Difficulty Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Aviation Data Systems Branch (AFS-620); P.O. Box 25082; Oklahoma City, OK 73125-5029.***

# 2002 NTSB AVIATION ACCIDENT STATISTICS

On March 18, the National Transportation Safety Board released preliminary aviation accident statistics for 2002 showing no fatal accidents involving airlines or commuters. Thirty-four accidents were recorded for scheduled airlines in 2002, all non-fatal. Additionally, there were no fatalities to persons on the ground during the year. In 2001 there were 531 fatalities involving U.S. airlines. It should be noted that half of these fatalities resulted from the September 11 hijackings. The 2002 statistics also show a decline in the accident rate on U.S. scheduled airlines. The 34 accidents involving scheduled airlines resulted in a preliminary accident rate of .337 per 100,000 departures (or 3.37 per million). This represents an 11 percent decrease from the 2001 rate of .379 accidents per 100,000 departures.

While departures decreased for U.S. scheduled airlines in 2002, nonscheduled 14 CFR 121 and scheduled 14 CFR 135 (fewer than 10 seats) operations increased. The nonscheduled Part 121 operations accident rate increased from 1.248 accidents per 100,000 departures in 2001 to 2.333 in 2002. The accident rate for scheduled Part 135 operators increased from 1.251 per 100,000 departures in 2001 to 1.575 in 2002.

Air taxis reported 58 accidents in 2002, down from 72 in 2001. The accident rate decreased from 2.27 per 100,000 flight hours in 2001 to 1.90 in 2002, and total fatalities decreased from 60 to 33.

The number of general aviation accidents decreased slightly from 1,726 in 2001 to 1,714 in 2002. Fatal accidents increased in 2002 to 343 compared with 325 in 2001. Despite reporting fewer accidents in 2002, the accident rate for general aviation aircraft increased slightly from 6.28 per 100,000 flight hours in 2001 to 6.56 in 2002.

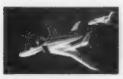
Tables 1-12 providing additional statistics are available at <http://www.ntsb.gov/Aviation/stats.htm>.

Table 1. **Accidents, Fatalities, and Rates, 2002 Preliminary Statistics U.S. Aviation**

| | *Accidents* | | *Fatalities* | | | | *Accidents per 100,000 Flight Hours* | | *Accidents per 100,000 Departures* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | All | Fatal | Total | Aboard | Flight Hours | Departures | All | Fatal | All | Fatal |
| U.S. air carriers operating under 14 CFR 121 | | | | | | | | | | |
| **Scheduled** | 34 | | | | 17,395,000 | 10,100,000 | 0.195 | | 0.337 | |
| **Nonscheduled** | 7 | | | | 616,700 | 300,000 | 1.135 | | 2.333 | |
| | | | | | | | | | | |
| U.S. air carriers operating under 14 CFR 135 | | | | | | | | | | |
| **Scheduled** | 8 | | | | 308,300 | 508,000 | 2.595 | | 1.575 | |
| **Nonscheduled** | 58 | 17 | 33 | 33 | 3,051,000 | | 1.90 | 0.56 | | |
| | | | | | | | | | | |
| U.S. general aviation | 1,714 | 343 | 576 | 570 | 26,078,000 | | 6.56 | 1.30 | | |
| | | | | | | | | | | |
| U.S. civil aviation | 1,820 | 360 | 609 | 603 | | | | | | |
| | | | | | | | | | | |
| Other accidents in the U.S. | | | | | | | | | | |
| **Foreign registered aircraft** | 11 | 2 | 4 | 4 | | | | | | |
| **Unregistered aircraft** | 16 | 5 | 5 | 5 | | | | | | |
| **Military aircraft that collided with civil aircraft** | 1 | 1 | 1 | 1 | | | | | | |

**Notes**

- All data are preliminary.
- Flight hours and departures are compiled and estimated by the Federal Aviation Administration.
- Departure information for non-scheduled Part 135 operations and general aviation is not available.
- Accidents and fatalities in the categories do not necessarily sum to the figures in U.S. civil aviation because of collisions involving aircraft in different categories.
- In 2002 there was a nonfatal collision between a scheduled Part 135 aircraft and a general aviation aircraft.



### • High Altitude Flying Typo

While enjoying the *FAA Aviation News*, I noticed what I think is a typo in the March/April issue. There is a reference on page 36 to the new edition of Advisory Circular 61-107A. Toward the bottom of the first paragraph there is a reference to Federal aviation regulation part 61 requiring special training for pilots to "...fly pressurized aircraft OR aircraft capable of being operated above 25,000 feet..." (Emphasis mine). The rule actually only applies to aircraft that are pressurized AND capable of flying above 25,000. Unpressurized aircraft that can get up that high don't require the special training. It's a very good idea, and something that I push when I am flight instructing, but it isn't a regulatory requirement.

Tom Dray
SoCal TRACON

*Good catch. You are right. The "or aircraft" should not have been there. Section 61.31(g) concerns additional training required for operating pressurized aircraft capable of operating at high altitudes. It states that "...no person may act as pilot in command of a pressurized aircraft (an aircraft that has a service ceiling or maximum operating altitude, whichever is lower, above 25,000 feet MSL), unless that person has received and logged ground training from an authorized instructor and obtained an endorsement in the person's logbook or training record from an authorized instructor who certifies the person has satisfactorily accomplished the ground training."*

*FAA AVIATION NEWS* welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, FORUM Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

### • Notice to Student Pilots

Student pilots are sometimes receiving an FAA Form 8500-9, Medical Certificate, instead of an FAA Form 8420-2, Medical Certificate and Student Pilot Certificate, at the time of their FAA medical examination. Another part of this problem is where an applicant has requested a combined Medical and Student Pilot Certificate in block 1 on the 8500-8 form, but the aviation medical examiner (AME) indicates in block 62 of the form that only a Medical Certificate has been issued.

If only a Medical Certificate is issued, the student pilot is flying without valid certificates and is subject to disciplinary action when caught. These student pilots are often very hostile toward the AME who failed to issue the appropriate certificate

In the case where the AME issues a combined Medical and Student Pilot Certificate, but erroneously indicates in the block 62 of the Form 8500-8 that only a Medical Certificate was issued, no record is established that the applicant is a student. This means that the student pilot does not receive critical safety information mailings from the FAA or from various pilot organizations.

AMEs must pay more attention to which certificate is issued to student pilot examinees and recognize that the student pilot may not know which certificate he or she should be issued. To prevent errors from occurring, it would be helpful to have your reception staff remove and void the certificates (Forms 8500-9 or 8420-4) the applicant is not applying for from the Form 8500-8 at the time the examinee checks in and indicates which type of certificate is being sought. Hopefully, this will avoid issuance of the wrong certificate.

Please double check for consistency the selection the applicant makes in block 1 and your selection in block 62 of the Form 8500-8 when transmitting and sending the paper application to the AMCD. This will assure that the correct records are created and available when needed.

Richard F. Jones, M.D., M.P.H.
Manager, CAMI's Aerospace Medical Education Division

*This information appeared in the* Federal Air Surgeon's Medical Bulletin *and we thought that it should be shared with the aviation public. So student pilots, check your medical certificate and make sure that you were issued the correct one.*

## STURGELL FAA'S DEPUTY ADMINISTRATOR

Robert A. Sturgell was sworn in as the 12th Deputy Administrator of the FAA on March 24. Sturgell joins Administrator Marion C. Blakey in heading the agency that regulates and advances the safety of the nation's airways and operates the world's largest air traffic control system. In support of the Administrator, Sturgell will oversee the agency's day-to-day operations, capital programs and modernization efforts.

Sturgell previously served Blakey at the FAA as her senior counsel. He held the position of senior policy advisor at the National Transportation Safety Board (NTSB), where he served as the Chairman's primary advisor and coordinator on the NTSB's recommendations, policy programs and other safety initiatives.

Prior to joining the NTSB, Sturgell was a flight operations supervisor and line pilot for United Airlines, flying the B-757 and B-767 in both domestic and international operations. Sturgell is also an attorney and has practiced aviation law at the Washington, DC, law firm Shaw Pittman.

A former naval aviator, Sturgell was an instructor at the Navy Fighter Weapons School (Topgun) and flew the F-14, F-18, F-16 and A-4 aircraft. Now a Commander in the U.S. Naval Reserves (Retired), Sturgell is a graduate of the U.S. Naval Academy and the University of Virginia School of Law.

## NEW NTSB APPOINTMENTS

In late March, three new members of the National Transportation Safety Board (NTSB) were sworn in. They are Ellen G. Engleman, Mark V. Rosenker, and Richard F. Healing.

Ellen G. Engleman was sworn in as a Member (five year term) and as the 10th Chairman (two year term) of the Board. Chairman Engleman was Administrator of the U.S. Department of Transportation's Research and Special Programs Administration (RSPA) from September 2001 until her recent appointment. With nearly 20 years of experience in public and governmental affairs, public policy and administration, Engleman is a business leader, attorney and accredited public relations professional. Before assuming her post at RSPA, Engleman was chief executive officer of Electricore, Inc., an Indiana-based non-profit consortium for research and development of advanced transportation and energy technologies through federal private/public partnerships.

Fulfilling a personal goal, she was commissioned as an officer in the U.S. Naval Reserve in 1999, and serves in Naval Reserve Mobile Public Affairs Team Detachment 208 in Jacksonville, Florida. Engleman graduated from the Kennedy School of Government at Harvard University in 1993 with a Master's in Public Administration. She was awarded a J.D. from the Indiana University School of Law in 1987, and admitted to the Bar in the State of Indiana, and the Federal Court system. She graduated from Indiana University in 1983 with a B.A. in English and Communications. She holds APR accreditation from the Public Relations Society of America.

Beginning January 20, 2001, until his appointment as a Board member and vice chairman, Mark V. Rosenker served as Deputy Assistant to the President and Director of the White House Military Office and later held a temporary assignment at the Transportation Security Administration, where he advised in the roll out of the Federal screener program.

Prior to his White House appointment, Mr. Rosenker was managing director of the Washington, DC office for the United Network for Organ Sharing (UNOS), overseeing the development, implementation and management of a national public information program dealing with all facets of organ transplantation in the U.S. Before joining UNOS, Mr. Rosenker served 23 years as Vice President, Public Affairs for the Electronic Industries Alliance.

Mr. Rosenker's professional experience also includes service in the federal government at the Department of Interior, the Federal Trade Commission and the Commodity Futures Trading Commission. In 1990, he was appointed by President Bush a member of the American Battle Monuments Commission (ABMC). After serving four years, Mr. Rosenker received the Commission's highest honor, the AMBC Meritorious Service Medal.

A major general in the Air Force Reserve, General Rosenker entered the Air Force in 1969 through the University of Maryland ROTC program. He is a graduate of the Air Command and Staff College and the Air War College. His current reserve assignment at the Pentagon is Mobilization Assistant to the Secretary of the Air Force, where he advises and supports the Secretary on reserve component issues.

Before joining the Safety Board, Richard F. Healing had been Director of Transportation Safety and Security for the Battelle Memorial Institute since March 2002. Based in Washington, DC, he had primary responsibility for Battelle's relationship with the FAA. Prior to this, Mr. Healing had served since 1985 as Director, Safety and Survivability, for the Department of the Navy. During his Navy civilian career, his work focused on aviation safety and emphasized benefits from sharing military safety information with other aviation community participants, especially commercial aviation.

In 2001, Mr. Healing was presented the Navy's highest civilian award – the Distinguished Civilian Service Medal. He also was recognized with the SAFE International "General Spruance Award" for safety education

achievement, and an Aviation Week "Laurel" for bringing new awareness to the importance of wire health and condition monitoring technology in aviation.

Before coming to Washington in 1983, Mr. Healing was president and CEO of an engineering, construction and contracting services firm in Connecticut. He also was executive vice president and managing director of Fairfield Precision Industries, a manufacturer of replacement parts for the military.

A licensed Professional Engineer since 1974, Mr. Healing attended the U.S. Coast Guard Academy and graduated from Worcester Polytechnic Institute. He pursued graduate studies at the University of Bridgeport, Bridgeport Engineering Institute Rensselaer Polytechnic Institute, Harvard University, and Georgetown University. He graduated from the Naval War College in 1990, and was selected to participate on the President's Commission on Executive Exchange. In 1991, he was a Senior Executive Fellow at Harvard University.

Mr. Healing served 6 1/2 years active duty in the U.S. Coast Guard. After more than 29 years and four commands, he retired from the Coast Guard Reserve as a captain.

Answers to Runway Safety Corner quiz: 2, 1, 4, 7, 3, 6, and 5..

# Calendar of Events

**June 12 – 15, 2003**
**100th Anniversary of Aviation and Aviation Safety Celebration, Hot Springs, Arkansas**

To be held at the Hot Springs Memorial Field Airport and the Hot Springs Civic & Convention Center, the events will feature a Super Aviation Education Safety Seminar with special guest speakers and a fly-in and aircraft display. Lindy Ritz, Director of FAA's Mike Monroney Aeronautical Center, will be the speaker at the Friday banquet and on Saturday the key note speaker will be Frank Del Gandio, Manager of the Office of Accident Investigations' Recommendation and Analysis Division. For more information, check its website at <www.avhotsp2003.org> or call (501) 760-5144. This is a U.S. Centennial of Flight Commission sanctioned event.

**June 24 – 27, July 8 – 11, July 15 – 18, 2003**
**McCall Mountain Canyon Flying Seminars, McCall Idaho**

These seminars are FAA WINGS approved instruction in Idaho backcountry flying. For more information, check its website at <www.mountaincanyonflying.com> or call (208) 634-1344.

**July 12 – 13, 2003**
**Hagerstown Fly-In – Drive-In, Hagerstown, Maryland**

To be held at the Hagerstown Regional Airport and will have aircraft displays, Young Eagle rides, and more. For more information, call (717) 597-9328 or (301) 733-7604.

**July 29 – August 4, 2003**
**2003 EAA AirVenture Oshkosh, Oshkosh, Wisconsin**

For more information, check its website at <www.airventure.org> or call (920) 426-4800.

**August 31 – September 1, 2003**
**Cleveland National Air Show, Cleveland, Ohio**

To be held at the Burke Lakefront Airport and will feature the U.S. Navy Blue Angels, classic air racers, WWII Warbird demos with pyrotechnics, and much more. For more information, check its website at <www.clevelandairshow.com> or call (216) 781-0747.

# Editor's Runway

*from the pen of Louise Oertly*

## Flying Wright...!

I knew that this day would come—it was inevitable! I couldn't con—uh, I mean convince—someone else to do it, so you're stuck with me writing the Editor's Runway, as I'm acting editor. As the only non-pilot on the magazine's writing staff of two (Mario's not a pilot either and he is quick to point out that he's an artist, not a writer—and, you should see his oil paintings), I can't share with you my flying experiences, but I can write about other things.

As the centennial anniversary of sustained, heavier-than-air, controlled, powered flight gets closer, it is being celebrated in a series of aviation events across the United States. FAA Administrator Marion Blakey, a member of the U.S. Centennial of Flight Commission, spoke at the Centennial's December 17, 2002, kickoff event where she said, "...we begin a celebration that marks a century of extraordinary accomplishment in powered flight. As we celebrate a century of achievement, all of us at the FAA are working to chart the next century of flight with improved safety, more capacity, and greater efficiency than ever before. This is the mission of the nearly 50,000 dedicated professionals across the FAA workforce—and they make it all possible."

How is the FAA involved in this celebration of flight? Our Aviation Safety Program is sponsoring various events such as the one in Hot Springs, Arkansas, mentioned on page 36. On the FAA's web site, <www.faa.gov>, there is a link called "Charting the Next Century of Flight," which presents a series of web sites that range from the history of the Wright brothers to educational projects, such as making your own Wright Flyer from Styrofoam™. There is also another very important role FAA is playing to make these celebrations successful and that involves the "first" flight itself.

To date there are four major 1903 Wright Flyer replicas in various stages of production. As mentioned in the Famous Flight article on page 18, the pilots are training on simulators and, in one case, using a flat bed trailer to test "tow" their Flyer until the pilots feel comfortable enough to fly the real thing. Everyone is talking about the proposed flights of these Flyers, but did you realize that both the pilots and the aircraft have to be certificated before they can legally fly? This is where the FAA comes into the picture. Of course, those planning to fly the aircraft are already certificated pilots, but why the aircraft? As these Flyers are too heavy to qualify as a Part 103 ultralight, the FAA has to certificate these aircraft before they can fly. Part of the FAA's contribution to the centennial celebration was to develop an aircraft certification process designed specifically for 1903 Wright Flyer replica aircraft. The Special Airworthiness Certificate is in the "Experimental" category for purpose of "Exhibition." So far, only one of the four Flyers—The Wright Redux Association in Glen Ellyn, Illinois—has received its airworthiness certificate and is now cleared to attempt powered flight. The aircraft's ultimate destination is Chicago's Museum of Science and Industry. Web site: <www.wrightredux.org>.

The American Institute of Aeronautics and Astronautics (AIAA) is currently constructing a second replica of the 1903 Wright Flyer in El Segundo, California. Plans are to have it ready for flight testing this summer. By the way, the first 1903 Flyer they built in 1997 is currently on a U.S. centennial tour, but its permanent home is in the FAA's Western Pacific Region Headquarters building in Hawthorne, California. Web site: <www.flight100.org>.

The Flugmaschine Wright is affiliated with the Virginia Aviation Museum near Richmond, where the aircraft will be on long-term loan after its test flight.

Of course, the status of the EAA's Wright Flyer has already been discussed. However, it faced one more rather interesting challenge. Its builder, the Wright Experience, is located in Warrenton, Virginia, within the Washington DC Metropolitan Area Air Defense Identification Zone (ADIZ). According to the Special Interest Notam, an aircraft must have a transponder and a two-way radio to comply with the Air Traffic and Transportation Security Administration (TSA) requirements to fly in the ADIZ. Equipment the Flyer made no provisions for. Fortunately, TSA granted The Wright Experience a waiver, which will permit the aircraft to fly as long as air traffic control is notified before takeoff and on landing. Can't you just imagine the phone conversation with air traffic? "This is the Wright Flyer requesting permission to take off. We'll be cruising at about 10 feet. We'll call you again when we land in about 12 seconds."

**United States Government Printing Office**

Superintendent of Documents

Washington, D.C. 20402

Official Business
Penalty for Private Use $300

PRESORTED STANDARD
POSTAGE & FEES PAID
GPO
PERMIT NO. G-26

# DO NOT DELAY -- CRITICAL TO FLIGHT SAFETY!